The New England
Journal of Medicine

VOLUME 206 MAY 26, 1932 NUMBER 21

# NEW ENGLAND BRANCH, AMERICAN UROLOGICAL ASSOCIATION

## A SIMPLE AND INEXPENSIVE METHOD FOR CARING FOR PATIENTS ON PERMANENT URINARY DRAINAGE*

BY EDWARD L. PEIRSON, JR., M.D.†

I FEEL rather embarrassed in presenting to the society such a trivial piece of apparatus and one which I did not invent. I think, however, that you will find it a great convenience in caring for ambulatory patients who are on constant drainage. This apparatus can be used for collecting the urine which drains from a suprapubic or a nephrostomy tube, or from a urethral catheter. The advantage of this method over the bags made especially for the purpose is primarily one of expense. However, in addition to the cheapness of the apparatus, its simplicity and efficiency make it a most satisfactory way of collecting the urine of any patient who is on constant drainage.

It is possible to buy in any drugstore for twenty-five cents a stopper which will fit the ordinary hot water bottle and has running through it a tube to which the patient's catheter or suprapubic tube may easily be attached. These stoppers are designed by the makers for the purpose of converting a hot water bag into a douche or enema bag‡. If you take a quart hot water bottle with such a stopper and fasten it to the patient and connect the patient's tube while the bottle is collapsed, you will then have a perfectly air-tight apparatus for collecting the urine which cannot possibly leak or spill over no matter what position the patient may assume. As the bottle is collapsed and entirely empty of air when connected, the urine which flows into it simply distends the walls of the bag. To disconnect, empty and clean the bottle is a very simple procedure. I have used this method of collecting the urine in quite a number of cases of both temporary and permanent urinary drainage and have always found it extremely satisfactory.

*Read at the meeting of the New England Branch of the American Urological Association, December 1, 1931.

†Peirson—Assistant in Urology, Massachusetts General Hospital. For record and address of author see "This Week's Issue," page 1113.

‡I believe there are several similar types of stoppers on the market, but the one which I have used is a metal stopper made by the Schrader Valve Company.

## GUNSHOT WOUND OF THE URETER*

BY SAMUEL N. VOSE, M.D.†

I WISH to report very briefly a case of gunshot wound of the ureter. It is a recent case and the chief interest lies in the simple fact of the rather unusual type of injury.

A week ago I was called to see a girl of 16 years who had become tired of life and decided to end it all with a No. 22 calibre gun. She held the gun in her right hand, with the muzzle against the right side of her chest, and pulled the trigger. The bullet entered the body below the breast in a downward direction. The family physician who was called to see her found her not in shock and not suffering particularly, with the wound of the bullet in front but no evidence of the bullet having left the body. He had x-rays taken which showed the position of the bullet near the third lumbar vertebra on the right side. He removed the bullet through a small incision in the skin and put the patient to bed. She had no blood in the urine at any time. Her temperature ranged from 98.6° to 99.2° and her pulse was around 90. About three to four hours after he removed the bullet, the nurse reported the dressings saturated with what appeared to be urine coming through the wound from which he had removed the bullet.

I saw the patient 24 hours after the original injury. She had no signs of shock but her abdomen was distended and tender, particularly on the right side. In the flank there was brawny swelling, very tender, and around the wound in the back was evidence of beginning cellulitis. Her temperature at this time was 99.2°, her pulse again 90, with no evi-

*Read at the meeting of the New England Branch of the American Urological Association, December 1, 1931.

†Vose—Surgeon, Genito-Urinary Department, Massachusetts Memorial Hospitals. For record and address of author see "This Week's Issue," page 1113.

dence of hemorrhage. She had not urinated that day but urine collected the day before showed no evidence of albumin, sugar, pus or blood. It seemed likely that there was an injury to the ureter, renal injury being fairly well ruled out by the absence of blood in the urine.

I cystoscoped her, passed a catheter up the right side, injected skiodan, about 5 c.c., and obtained this picture which shows undoubted extravasation. (Fig. 1.) I suggested that the doctor call a surgical consultant in regard to possible abdominal injury. He thought there was hemorrhage in the abdominal cavity and advised abdominal operation.

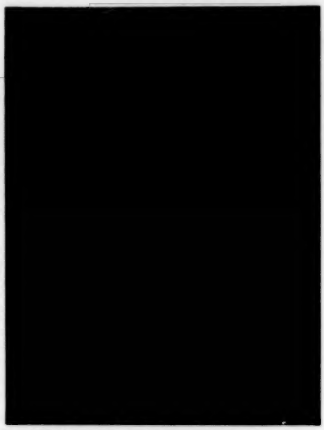


FIG. 1. Extravasation of opaque fluid following injury of the ureter.

I deemed it wise to drain the extravasated area first and accordingly made an incision in the right flank and found the ureter completely severed by the bullet except for a small shred of tissue which contained a small artery and vein. The proximal end of the ureter was about two inches long. Separated from this about 1½ inches, but nevertheless connected by this small strand of tissue, the distal end was found. The ureteral catheter, which I had left in at the time of cystoscopy, was put up into the proximal end of the ureter and into the kidney pelvis. The ends of the ureter were approximated with interrupted sutures of chromic catgut. Owing to the fact that she was in line for an abdominal operation, and owing to her general condition, no attempt was made to do a classical anastomosis. The kidney wound was closed with drainage.

The abdomen was then opened by Dr. C. T. Howard, who found a great deal of blood in the abdomen and a small opening in the duodenum which had closed of itself; that is, the mucous membrane had extruded through the opening in the peritoneum and there was no leakage of duodenal contents, simply blood. He drained the abdomen. The first three days following operation she discharged urine through the loin wound and also by way of the ureteral catheter. Since then, for the past four days, she has drained no urine through the wound.

The interest in this case lies particularly in the unusual nature of the injury. During the World War there were but four ureteral injuries from bullets and prior to that time there were about 25 cases reported. Most authorities seem to indicate that it is not worth while to try to make an anastomosis, that stricture formation following such a procedure will result in hydronephrosis and require nephrectomy later. It remains to be seen whether the anastomosis in this case will hold and if it does, whether stricture will subsequently develop.

NOTE:

The final outcome of this case was loss of the right kidney. Shortly after the above report was made, the ureteral catheter was removed. For several days the urine was discharged entirely via ureter. Then a chill and rise in temperature occurred and the sinus reopened. The ureteral catheter was reinserted, and again the sinus closed temporarily. Permanent closure could not be obtained, however, and six weeks after the original injury, nephrectomy was done. Convalescence was uneventful.

## REPORT OF AN UNUSUAL CASE OF A LARGE DIVERTICULUM OF THE BLADDER IN AN INFANT*

BY EDWARD J. O'BRIEN, M.D.†

THIS is a rather unusual case of a large diverticulum of the urinary bladder in a child of two years and three months of age. The significant part of the case was that the child was thoroughly well and healthy until four days before admission to the hospital, the admission being because of an acute retention of urine.

I was called to see the case and thought at first that the child had a stone impacted in the posterior urethra, or a congenital urethral valve. On first seeing the child there was a mass in the suprapubic region about the size of a grapefruit, which proved to be distended bladder. I succeeded in passing a No. 10F silk woven catheter, ruling out the fact that there was anything in the posterior urethra acting as an obstruction. This child had 19 ounces of residual urine. Rectal examination showed a rather large fluctuant mass that could be easily palpated. I cystoscoped the child and saw an opening about a quarter of an inch away from the left ureter and made a diagnosis of diverticulitis. This picture shows the anteroposterior view of the cystogram in this child. The bladder was filled with sodium iodide. The lateral picture shows the large diverticulum.

I operated suprapubically and excised the di-

*Read at the meeting of the New England Branch of the American Urological Association, December 1, 1931.
The x-ray plates were taken by Dr. Allen H. Blake of the Somerville Hospital.

†O'Brien—Visiting Surgeon to the Cambridge Municipal Hospital. For record and address of author see "This Week's Issue," page 1113.

verticulum extraperitoneally in a one-stage operation. The patient had a good convalescence.

That which was most interesting about this case was the lack of serious symptoms up to four days before the child entered the hospital, at

REPORT OF UNUSUAL CASE OF DIVERTICULUM IN CHILD.

Anteroposterior view of cystogram of urinary bladder—this being normal demonstrates clearly the importance of taking a lateral view in these cases.

which time the mother stated that he just "grabbed" himself when he tried to urinate; he then developed an acute retention. It is rather singular to see a diverticulum in a child of that age and I think if we cystoscoped more children and looked for this condition we should find many more cases. The patient's urine was not infected. An occasional leukocyte was found in the sediment at the time of operation. It is not infected at the present time.

THE HISTORY

A. S., male, aged 2¼ years, was admitted to the Somerville Hospital on April 5, 1931, the chief complaint being acute retention of urine.

Family History: Father and mother living and well, one sister living and well. No history of familial tuberculosis, cancer, heart disease, diabetes or insanity.

Past History: Patient has had measles and chicken pox and an occasional upper respiratory tract infection; otherwise has been a healthy baby.

Present History: For about a month past the mother has noticed that the little boy would occasionally cry out with pain when urinating. Four days before admission she noticed that the child was having considerable difficulty in passing urine. Twenty-four hours before admission the symptoms grew markedly worse and the child voided with the greatest amount of difficulty, being able to evacuate only a few drops of urine at a time. Early this morning he was in great agony. He could not void and his mother noticed a swelling in the lower abdomen and brought the child to the hospital. He was seen by Dr. John Marshall who called me in consultation.

Physical Examination: A well-developed baby, about two years of age, lying in bed, apparently in considerable pain.

Head: scalp negative.

Eyes: pupils equal and react to light and distance; no spasm.

Ears: both drums negative.

Nose: no discharge, tenderness or deformities.

Mouth and throat: teeth in good condition—negative.

Neck: no rigidity or adenopathy.

Thorax: symmetrical; expansion equal on both sides.

Heart: not enlarged; no murmurs; sounds regular, and of good quality.

Lungs: clear and resonant throughout; no râles.

Abdomen: very rigid; liver and spleen not felt but there was a tumor in the lower abdomen about the size of a large grapefruit which proved to be a distended bladder.

Extremities: negative. Reflexes normal.

Treatment: An attempt was made to pass a soft rubber catheter but this was not successful. A No. 10F hard catheter was passed and 19 ounces of urine were drawn from the bladder. In the next 24

REPORT OF UNUSUAL CASE OF DIVERTICULUM IN CHILD.

Lateral view of cystogram showing large posterior diverticulum of urinary bladder in child.

hours the patient was catheterized every eight hours. Urine and sediment normal except for an occasional leukocyte. Flat x-rays of KUB were negative for calculus.

April 7, 1931. Cystoscopic examination of bladder disclosed an opening about one-quarter inch away from the left ureter and a diagnosis of diverticulitis

was made. Cystograms of the bladder were then made, both in the anteroposterior and lateral positions. This latter position showed a large diverticulum of the bladder practically filling the entire lower pelvis. On rectal examination this could be felt very definitely.

On April 9 the child was operated using avertin and a small amount of ether. Linear incision extending from umbilicus to symphysis. The bladder was exposed and completely denuded of peritoneum. After opening the bladder an attempt was made to remove the diverticulum by the Young intravesical method but the diverticulum was so adherent to the pelvic structures that this was impossible. The diverticulum was then packed with gauze and with the index finger of one hand in the diverticulum it was removed by blunt dissection. A small part of the dome, which was adherent to the rectum, was left in situ. The diverticulum was adherent to the left ureter but this was dissected free and did not have to be transplanted. The opening of the diverticulum was closed with three layers of chromic catgut sutures. The bladder was then closed leaving a large Pezzer catheter in the suprapubic opening for drainage. Two pieces of rubber dam were placed in pelvis for drainage. The child had a stormy convalescence for about three days and from then on the convalescence was uneventful. The bladder was drained for 3½ weeks. The child left the hospital at the end of 4½ weeks with the suprapubic wound entirely healed and with perfect bladder function.

November 7, 1931. Child was submitted to cystoscopic examination and the bladder was found to be normal, except for the scar close to the left ureter which was the site of the opening of the diverticulum. The child has perfect bladder function and normal urine.

## THE USE OF RADIUM AND THE ROENTGEN RAYS IN THE MANAGEMENT OF CANCERS OF THE GENITOURINARY ORGANS*

BY ARCHIE L. DEAN, JR., M.D.†

THE purpose of this paper is to describe the management of cancers of the genitourinary organs when radium and the roentgen rays are employed. These methods are used in the Department of Urology of the Memorial Hospital.

The use of physical agents is becoming more general in the management of new growths of the genitourinary organs. These remedies are powerful. Depending upon the skill with which they are administered a patient may receive prompt and lasting relief, or additional complications may be caused and death hastened.

Since the use of radiation in urology is dependent upon knowledge of the natural history of the disease, diagnosis, surgery, and other procedures of a specialized character, the best results are obtained when full responsibility for each patient is borne by the urologist. Consultation with the radiologist often is helpful, but the urologist should familiarize himself with the basic principles and more important technical procedures of radiation therapy. The activities of certain firms engaged in selling radon to the medical profession are to be condemned when they prescribe for patients they have never seen, and claim for therapeutic technique a simplicity which does not exist.

A few principles of the treatment of genitourinary cancers are generally applicable irrespective of the organ involved:

1. Irradiation is less effective in any patient when the quality of the blood is poor. Of course this condition frequently is only one of the manifestations of general weakness. To remedy this, all patients should be given the benefits of favorable hygiene. This includes a liberal diet to which is added liver or its extracts. Transfusions of whole blood frequently are of great value.

2. The exact histologic structure of each tumor should be known. Appropriate irradiation can be given only upon the basis of this information. In addition, there is little value to case histories which lack microscopic data. In most instances this necessitates a biopsy. On the other hand, biopsies never should be performed upon primary renal or testicular tumors. Such treatment, in these cases, destroys important natural barriers and the growth fungates rapidly.

3. It has been demonstrated repeatedly in the use of radon interstitially that the first application is by far the most important. It should be thorough and adequate in amount. Perhaps the greatest danger in radiation therapy is the danger of insufficient treatment. Therefore, if an ample supply of radium is not available, some other method should be employed.

4. Recurrent tumors usually are less sensitive to radiation than primary growths. Destruction of natural barriers such as the capsule of a tumor or regional lymphatics renders the prognosis more grave.

5. The presence of infection in the primary tumor or in metastases materially lessens the efficacy of radiation.

6. When careful examination of a patient reveals an incurable condition and irradiation has been employed simply for palliation, it happens not infrequently that there is a marked local regression. It is highly dangerous to reclassify such a case and treat it more intensively, perhaps operating, in the effort to achieve a cure. Only too often the resistance of the patient diminishes rapidly and death is hastened.

*Read at the meeting of the New England Branch of the American Urological Association, December 1, 1931.

†Dean—Associate Surgeon, Memorial Hospital. For record and address of author see "This Week's Issue," page 1113.

7. In the treatment of cancers of the genito-urinary organs the field for palliative radiation has definite limits. In most cases the greatest degree of palliation is accomplished when earnest efforts are made to obtain a cure. If radiation is part of the urologist's armamentarium he should use it with judgment to the full extent of its possibilities.

### KIDNEY

Embryonal adenosarcomas or Wilms tumors in children usually are highly radio-sensitive, but they are usually discovered only when the growth is huge. We have never cured this disease, but we believe that radiation is a valuable adjunct. As soon as the diagnosis has been made, external applications of high voltage roentgen rays, or radium, are given. This causes prompt regression in the majority of cases. When pronounced diminution in size or complete disappearance of the tumor has occurred, nephrectomy should be performed. If operation is withheld, recurrence is almost certain. The recurrences usually are less radio-sensitive and may become inoperable in a short time.

Although Wilms tumors spread most frequently by infiltration, metastases may occur relatively early in the course of the disease. They grow so rapidly, often in the lungs, that their presence is a contraindication for surgical treatment. Radiation by means of roentgen rays or the radium pack is of great palliative value. Temporary regression has been obtained in a high percentage of cases.

One should never cut into these tumors for diagnosis. This should not be necessary because there are no contraindications for performing thorough cystoscopic examination and pyelography upon the youngest patients.

Irradiation must be applied to young children with the greatest caution. The tolerance of each patient must first be learned. Aggressive treatment must always be limited by this information.

Carcinoma of the renal pelvis is best treated by surgery. Radiation is ineffective because the tumor is situated deeply, is radio-resistant and is usually infected.

Although renal adenocarcinomas (hypernephroma) are radio-sensitive, the writer does not know of a case cured by radiation. In fact radiation of this tumor is not without serious hazard. The blood vessels of the growth are so delicate that external irradiation has caused death from hemorrhage. For this reason nephrectomy is recommended as soon as the diagnosis has been made if the patient is free from metastases. When metastases have been discovered the condition is inoperable and irradiation alone should be employed. Despite lack of success in curing patients, the disease may be kept in check for many months by repeated treatments.

The management of metastases from hypernephroma depends somewhat upon the part of the body invaded. The method of choice is external radiation with high voltage roentgen rays and the radium pack. Intensive radiation should be given because there is less danger of hemorrhage, and the tumors, especially those involving bone, are radio-resistant.

After nephrectomy for renal cancer the patient should be treated with external irradiation as a prophylaxis against recurrence. When tumors recur locally, heavy external applications are indicated. In the case of more superficial recurrences in the wound, it is possible with the roentgen rays to reduce huge growths to necrotic débris. Under the microscope this material reveals no formed elements.

### BLADDER

We have never cured a case of papilloma or cancer of the bladder with external irradiation alone at the Memorial Hospital. On the other hand, results with interstitial irradiation have been encouraging. The relatively differentiated type of cells composing the majority of these tumors represents tissues responsive only to irradiation of great intensity. At present this cannot be delivered into the tumor from external sources. Small radon seeds with walls of gold 0.3 mm. in thickness are convenient to imbed into tumors both through the cystoscope and with the bladder opened.

While the treatment of bladder papilloma hardly lies within the scope of this paper the subject is important. In most cases papillomata are treated effectively with fulguration. If the growth resists the electric spark, gold radon seeds buried in the base of the tumor will cause prompt regression. It is a clinical error to consider these growths simple, isolated, benign tumors. Rather they are manifestations of a disease involving the mucosa of the entire bladder. Sometimes the mucous membrane is affected in all parts of the urinary tract. For this reason operative removal of one tumor may be followed promptly by another similar growth elsewhere and operations cannot be repeated indefinitely. Therefore, no effort should be spared in destroying bladder papillomata as rapidly as possible through the cystoscope. For this purpose radon seeds are valuable.

Bladder cancers are of two types, the papillary and the flat. About fifty per cent of our patients with papillary carcinoma have been controlled for three or more years, while about thirty per cent of the flat tumors have been controlled for a similar period. Before undertaking the treatment of any of these tumors they should be classified as to form, size, location, histologic structure, amount of infiltra-

tion, and the presence or absence of metastases. This information may be obtained by cystoscopic examination, a biopsy from the base of the growth, and stereoscopic cystograms with the bladder inflated with air. The general condition of the patient must be ascertained, with a special emphasis placed upon the cardiovascular and renal reserve.

A bladder cancer should never be treated with fulguration. The electric spark at present is inadequate to destroy the growth completely. Also there is clinical evidence to indicate that tumors so treated have been stimulated to more rapid local development and earlier metastasis.

If the size and position of a papillary carcinoma is such that its base can be visualized accurately through the cystoscope, the tumor may be treated successfully with interstitial irradiation through the urethra. Gold radon seeds of 2.0 millicuries each are buried 1 cm. apart and 1 cm. deep. If spinal anesthesia is used and epinephrine is added to the irrigating solution to prevent bleeding from the needle pricks, the operation may be performed at one sitting. Otherwise the procedure must be repeated until the base of the tumor and an outlying zone one cm. in width have been covered accurately. If the implantation has not been completed within three weeks it sometimes happens that vision will be obscured by slough produced by earlier treatments.

When all of the base of a papillary tumor cannot be seen clearly through the cystoscope, suprapubic cystotomy should be performed and gold seeds imbedded under direct, unobscured vision.

Flat infiltrating bladder carcinomas, irrespective of size, should be treated with radium through the open bladder. The submucous extensions of this disease cannot be detected with sufficient accuracy through the cystoscope.

In performing suprapubic cystotomy with radon implantation certain details should be observed. Spinal anesthesia is recommended. Before opening the bladder the wound is carefully packed with gauze to prevent tumor implants should any of the bladder contents be spilled. All manipulations are gentle. The bladder is never separated from its attachments because we think mobilization favors dissemination of cancer through lymphatics. Resection is never done. To facilitate burying gold seeds in the base of a papillary tumor the bulk of the intravesical projection is removed with the cautery snare. We do not coagulate the base. When the base of the tumor has been exposed clearly, gold radon seeds of 2.0 mc. each are buried throughout and to a distance of one cm. beyond any visible or palpable evidence of involvement. The seeds are buried with precision one cm. apart in both the horizontal and vertical dimensions. In most cases the tumors are flat and are about 1 cm. thick. When each seed marks the angle of an equilateral triangle, the sides of which are one cm. in length, every part of the enclosed area receives radiation from at least three seeds.

Flat bladder cancers are treated in the same way except that there is no projecting tumor to remove.

From this description it may be observed that the amount of radon needed to treat a bladder carcinoma depends entirely upon the size of the growth. More than fifty seeds aggregating over 100 mc. have been used in several instances without causing harmful reactions. Occasionally when a large dose has been applied the patient suffers rectal irritation. Quite infrequently there is a blood-tinged diarrheal discharge. This subsides within a few days under symptomatic treatment. We have had no vesicorectal or vesicovaginal fistulae.

A certain amount of sloughing frequently follows the use of gold seeds, although theoretically it should not occur. Probably it is largely due to infection. It is not nearly so great as that formerly produced by the more caustic glass tubes. Calcareous deposits may impregnate the slough, and even bladder stones may form. All of this prolongs convalescence and increases the patient's discomfort. Forcing fluids, maintaining a slightly acid urine, and irrigating with bland solutions keep the bladder clean and assist in the uncomplicated healing of the irradiated area.

After treatment the patient should be kept under close observation. Little information can be gained by cystoscopy within four months of a thorough radiation because slough covers the site of the tumor. However, observation should be made with such frequency that recurrences will be detected while they are still small enough to be treated by endoscopic measures.

We carry out the gold seed implantation regardless of the relationship between the tumor and the ureteral orifices. Quite rarely there are symptoms from an occluded ureter. If this cannot be remedied by dilatation through the cystoscope the kidney must be drained externally.

In conclusion it should be emphasized that in treating bladder cancers with radon the urologist must work with the purpose of curing a patient by the first operation. For this reason radiation must be adequate and thorough.

### PROSTATE

A careful examination of the patient's general condition and an accurate estimate of the extent of the disease should be the first steps in the management of a case of carcinoma of the prostate. Most patients require prompt relief of urinary retention. This, together with its attendant kidney failure, and not cancer

*per se* is responsible for the depreciated health of the majority of our patients. Unless the bladder obstruction is removed the patients will die before the effects of irradiation can become established. Again, if irradiation is to be employed, the obstruction must be relieved first because full doses of radon or the roentgen rays may cause a local reaction which, not infrequently, transforms a partial into a complete retention.

Nearly all of our patients present an inoperable condition at the time of their first visit. For this reason we operate only to relieve urinary retention. This is done as simply as possible. The patient is treated much as the usual prostatic case is prepared for prostatectomy. The obstruction is punched out with Young's instrument. The tissue removed frequently reveals the type of tumor with which we have to deal. This is important because there seems to be a considerable degree of variation in the radio-sensitivity of prostate cancers. When the punch operation is not performed a specimen is taken by aspiration or with the Hoffman punch inserted into the gland through the perineum.

Owing to the radio-resistance of prostate cancers in general and because the tumor is situated so deeply, intensive interstitial radiation is the only efficient treatment. Radiating the growth either through the urethra or rectum is a temporizing measure which makes matters worse.

We usually give a preliminary cycle of high voltage roentgen rays to the pelvis. This consists of four suberythema doses directed toward the prostate, the purpose being to promote absorption of edema and congestion. General pelvic discomfort and pain radiating down the thighs, not caused by metastases, are usually relieved promptly. Of equal importance is the alteration of the gland itself which results in carcinomatous areas standing out in relief. This makes treatment easier.

The technique of radiating accurately both prostate and seminal vesicles is difficult, but it can be accomplished. Fifteen per cent of our patients are apparently free from disease after five years. The patient is placed in the lithotomy position. The skin of the perineum is prepared as for operation. Local infiltration anesthesia suffices. With the left forefinger in the rectum, a needle is inserted into the perineum and is guided carefully by rectal touch. Gold seeds may be deposited or radon-bearing needles may be left in place until a sufficient dose has been given.

Treatment with gold seeds is the more difficult, but it is much more rapid since the entire tumor-bearing area may be treated at one sitting. In practice this method seems to give a more even distribution of radiation. The seeds most commonly used are of 2.0 mc. each. They are spaced as carefully as possible one cm. apart. Just as in the treatment of bladder tumors the total dose depends upon the extent of the cancer.

When a radon-bearing needle is used the strength is approximately 50 mc. It is left in place until a dose of 300 mc. hours has been delivered. Then it is moved to another location or withdrawn completely. This treatment is repeated at weekly intervals until the entire growth has been radiated. It is possible to hasten treatment by using two needles instead of one, but a larger number makes spacing less accurate. In all cases careful records of each treatment must be made. This is done by diagrams, sketches, or stereoscopic roentgenograms.

Somewhat more than a year ago we began inserting gold seeds into the prostate through the open bladder. The method seemed valuable in certain cases, but more data are required.

After all parts of the tumor have been radiated the patient is placed under careful observation. Hospitalization is seldom required. Occasionally medication is prescribed for the relief of temporary irritability of the bladder or rectum. Otherwise there is little discomfort. In an exceptional case the gland may swell to such an extent as to require catheterization, but this subsides. In six to eight months, if growth activity can be demonstrated, further treatment should be given.

Metastases from carcinoma of the prostate do not respond to the physical agents now in use, but in most cases pain is relieved.

### PENIS

In treating epithelioma of the penis we attempt to remove the tumor promptly and to save as much of the organ as possible.

Penis cancers are either papillary or flat. However, each is a squamous carcinoma and is radio-resistant. While the majority of the lesions are easy to diagnose, biopsies should be performed in all cases. Occasionally an atypical manifestation of syphilis or a granulomatous ulcer of a different etiology can be identified only by the microscope. We believe that a biopsy, carefully performed with a sharp razor, does little if anything to hasten metastasis. On the other hand, there is evidence suggesting that certain methods of treatment, especially those in the nature of incomplete destruction, are conducive to early metastasis.

As soon as the malignant nature of the primary lesion has been demonstrated, the groins should be palpated carefully. Regional adenopathy is usually present (88 per cent of our cases). Whether it is the result of infection from the ulcerating tumor, or is due to metastases, is frequently impossible to determine at this time by palpation alone. Aspiration biopsy

has proved of the greatest value in these borderline cases.

The importance of infection in the inguinal nodes should be emphasized. Certainly radiation is powerless to combat metastatic squamous carcinoma in infected lymph nodes. No doubt the mortality of block dissection is increased by this factor. We recommend that no treatment be given the groins until infection subsides. To accomplish this the penis lesion should be removed as promptly as possible.

If the tumor is no larger than two cm. in diameter and has not penetrated Buck's fascia, intense surface radiation with the radon plaque has given excellent results. Regression of the tumor is prompt and the cosmetic result is excellent. We have never failed to control a case in this carefully chosen group. When the tumor is larger and has penetrated more deeply, radiation should not be used. Owing to the shape of the penis an even distribution of radiation cannot be given to a larger tumor. Even if the growth could be controlled the patient would be compelled to suffer pain and the organ would be deformed. In these more advanced cases operation is advised. This consists of amputation 1.5 cm. proximal to any visible or palpable evidence of disease. Usually enough of the penis can be saved to direct the urinary stream or even permit coitus.

The management of inguinal metastases is difficult. After removal of the primary tumor, the patient is put under observation and all groin nodes are watched and measured. If no metastases are present, adenopathy will subside. If nodes become larger and harder, or if aspiration biopsy is positive, we know that we are dealing with cancer.

Generally we treat this condition palliatively with additional external radiation. Occasionally the lymphatics are exposed and gold radon seeds are imbedded in the nodules. We rarely perform block dissection and never operate upon groins until metastases have been proved histologically. We consider the lymph nodes a protective barrier to the spread of cancer. When they have been removed we have no further resource.

It seems advantageous to operate upon the groins secondary to removal of the penis lesion. Patients improve in general health when the painful and infected primary growth has been removed and are better able to withstand whatever treatment the inguinal regions require.

### TESTIS

Of all of the malignant tumors of the genitourinary organs teratoma testis responds best to radiation. The prognosis of this disease has been radically altered since the advent of radiation therapy. A survey of the older textbooks shows that approximately eighty-five per cent of all patients with this tumor died of the disease, in spite of the best available surgical treatment. Of the patients who were seen at the Memorial Hospital in an operable condition, 85 per cent have been free from symptoms or signs of the disease for from five to thirteen years after radiation.

The highly malignant embryonal tissue which composes the majority of these tumors grows rapidly locally and metastasizes relatively early to inaccessible regions, such as the retroperitoneal lymph nodes and lungs. Fortunately, embryonal carcinoma is highly radio-sensitive.

It is essential that the correct diagnosis be made as early as possible. Careful physical examination is necessary to determine the presence or absence of metastases in pelvic, lumbar, or prevertebral lymph nodes, in the lungs and in the left supraclavicular fossa. Roentgenograms of the chest should be taken routinely. A biopsy never should be attempted as it produces a rapidly growing, fungating tumor.

If the patient presents a testicular tumor and no metastases can be found, maximal exposures of external radiation are given to the testis and to the abdomen of the same side. When repeated measurements show that the tumor has regressed to the size of a normal testis, or smaller (usually in about four weeks after radiation), orchidectomy is performed. Under local anesthesia the spermatic cord is doubly ligated and cut as it leaves the inguinal canal, and the testis is gently separated from the tunica vaginalis. Great care should be taken that the tunica albuginea is not punctured. We have seen local recurrences follow promptly when the coats of the tumor have been cut accidentally and even a few drops of the contents spilled in the wound. After the operation two or three radiation treatments are given the scrotum, groin, and pelvic and lumbar lymphatics at suitable intervals.

Metastases from teratoma testis are treated with external radiation alone. No operation of any kind is attempted. Surgery has very little to offer these patients, while heavy doses of radiation frequently control the disease.

Whenever the primary tumor is radiated the normal testis should be protected carefully with sheets of lead suitably molded. In spite of this precaution condom specimens revealed aspermatogenesis in practically all of our patients. Usually this was transitory. It sometimes happens that the primary tumor is not removed after radiation. When repeated cycles of radiation are given to ensure complete devitalization of the tumor, the spermatogenic function of the sound testis was destroyed permanently.

### CONCLUSIONS

1. The use of radium and the roentgen rays is an important adjunct to surgery in the man-

agement of renal adenosarcoma and adenocarcinoma.

2. It is probable that bladder cancers can be controlled more effectively with interstitial radiation than by surgery alone. After radiation the operative mortality is lower and the end results are better.

3. About 15 per cent of prostate cancers can be controlled by radiation. The majority of these cases were inoperable when first seen.

4. There is a field of usefulness for radiation in the treatment of superficial penis cancers. Beyond this, radiation is a valuable adjunct to surgery.

5. The treatment of teratoma testis by radiation is so successful that surgery should be discarded except for the removal of a radiated testis.

## Discussion

Dr. George G. Smith: I have enjoyed listening to Dr. Dean's paper very much. Anybody who has been to the Memorial Hospital realizes how firm a scientific foundation they have there for their radiation therapy. The research departments, containing people who are working constantly with the action of radium and x-ray, are very interesting and they are putting out a lot of very sound work on which the rest of us have to depend when we attempt to use these physical methods of treatment.

I agree in the main with everything that Dr. Dean has said. I think that his attitude has been very sane and that he has presented his different phases of urological cancer in a very sound light. I am a good deal aghast at the amount of radiation which he says he sometimes uses in the clinic. Last year I went down there with Dr. Boyd and Dr. Barney and we saw Dr. Barringer and Dr. Dean employing radium in carcinoma of the prostate and bladder; that experience has spurred me on to using much larger doses of radium in cancer of the prostate, in cases which seem to me suitable for that type of therapy. The type of prostate which seems to me to require radium therapy is usually the prostate that obstructs. I have not for quite a long time attempted to treat with radium any prostate in which I did not also open the bladder at the same time that I implanted the radium in the prostate gland.

My experience with radium in carcinoma of the prostate has been that in some cases the growth has apparently been taken care of by the radiation but I think that the price that the patient has to pay has been at times quite a high one. Only recently I had a patient who had sloughed out a hole the size of a ten cent piece between the posterior urethra and the rectum some three or four months after radium had been implanted in his prostate. The growth in his prostate I had attacked twice before, once by perineal partial prostatectomy and another time by the implantation of radium in the prostate through the perineum. This very malignant type of advancing carcinoma of the prostate is now apparently well controlled, the size of the gland has diminished very much and there is no evidence of ulceration in the bladder so far as one can determine from the condition of the urine but there is this distressing complication which means that the patient passes urine through the rectum and passes feces through the penis. His urinary control has been completely destroyed and that has been the situation in another carcinoma of the prostate in which I implanted radium seeds, giving a dosage of only 4000 mc. hours. I feel, however, that there is a distinct field for radium in cancer of the prostate and that we must work with this subject until we find the best possible way of applying the radium. I am inclined to think that possibly the implantation into the prostate through the open bladder of platinum needles containing the element will give a less caustic and possibly a better governed dosage than the implantation of seeds, though that is pure speculation.

In regard to the treatment of cancer of the bladder by radiation, I would like to ask Dr. Dean whether he means that in implanting the seeds one cm. outside the borders of the tumor he attempts to plant these seeds one cm. deep. I do not see how he could do that because the bladder wall is usually less than ½ cm. in thickness and if you plant these seeds deeply you put them outside the bladder altogether, or may well do so, with the danger possibly of not knowing where they go or what structures they will affect. The formation of stubborn ulceration in the bladder from the use of radium seeds in cancer of the bladder I have met in a few cases and in those cases the patient's condition was very distressing because he continually formed slough on which calcification developed. In one case I opened the bladder later, thinking that the tumor had recurred, and found nothing but this stubborn ulceration lined with thick yellow tissue which I electro-coagulated in the hope of destroying the ulcer and allowing fresh tissue to grow in and heal the ulceration. That was not entirely successful although he was somewhat relieved.

In carcinoma of the bladder I am very much in favor of resection if it can be done, and the best results I think have been where resection was possible, but in certain cases where a fairly simple resection is not possible, cases of growth around the trigone and outlet of the bladder, radium implantation offers us a means of treatment which is radical and which will well supply the answer to these questions. But it has seemed to me desirable to drain these cases su-

prapubically for a number of weeks until the postradiation reaction has largely subsided.

I have enjoyed Dr. Dean's paper very much and I think it has put the whole subject very clearly and very plainly before us.

DR. ROGER C. GRAVES: I have enjoyed Dr. Dean's paper very much. It seems to me to have been a very concise statement of the situation as they see it at the Memorial Hospital, and I know of no better group in our country today, working along this particular line. Certainly cancer is the most important problem that we have to deal with in urology, and I feel that we are fortunate to have had the opportunity of listening to this very excellent review of the subject.

I was greatly interested in the slides showing metastases to bone from bladder carcinoma. The general opinion is, and I believe most roentgenologists still feel, that this is something that usually doesn't happen. I have felt for some time that it does occur occasionally, and I am interested in this further evidence of it. I have had three such cases, but I have not been able to call attention to them because in each instance, for some reason or other, I have been unable to obtain the final histologic proof. The most striking one of the group was a man with clinically unmistakable, advanced carcinoma of the bladder, who had complete destruction of the upper third of his radius. Unfortunately his wife was insane and it was impossible to obtain permission for postmortem studies to determine definitely the association between the two lesions.

I am glad that Dr. Dean emphasized a point that I am sure deserves emphasis, that the benign papilloma of the bladder is not in itself the sole disease, but that rather it is a manifestation of a neoplastic tendency on the part of the bladder mucosa and that papillomata developing later in the same soil are really just further proof of this disposition to grow tumors. I think that is the proper concept, and one which will enforce us to treat these lesions with the greatest care, not only at the moment but, with careful observation, through the ensuing years.

Concerning carcinoma of the prostate of a degree of advancement which, properly, requires radium rather than surgery, I think, as Dr. Smith does, that the surgical suprapubic approach offers opportunity for a much better application than the surgical perineal route. Through the opened bladder it is possible, by the aid of fingers in the rectum, to elevate the prostate and seminal vesicles into the field sufficiently to apply the seeds or needles with the guidance of touch and vision, more accurately than can be done through a perineal exposure. This is especially true with reference to the intravesical aspect of the gland and the region of the internal sphincter. I think it is certainly better to introduce instruments into the growth this way, than to pass them through the skin and normal tissues of the intact perineum.

I like very much Dr. Dean's program for the treatment of carcinoma of the penis. It is the plan we follow at Pondville where we have had opportunity to see a rather unusually large group of these cases, and with this program we have had most satisfactory results.

It seems to me, finally, that the situation with malignant tumors of the testicle, as they have found it at the Memorial Hospital, emphasizes again the importance of careful judgment in the treatment of cases of this type. Too often this highly malignant condition is dealt with at once by an operation which may accomplish little more than to hasten the widespread dissemination of the disease. The fact that testicular tumors should not be operated upon, or not operated upon until preliminary radiation has been given, appears to be a lesson that is still greatly needed, and I believe that the general plan outlined by Dr. Dean, with intensive deep x-ray therapy first and orchidectomy later, should be accepted as the procedure of choice. Metastatic retroperitoneal glands secondary to the growth in the testicle offer another problem, but here again I feel that in the average case, deep x-ray probably offers a better chance in the long run than attempts at surgical extirpation.

DR. J. D. BARNEY: I think this is one of the clearest expositions of the use of x-ray for carcinoma of the genitourinary tract that I have heard. Having seen the work that Dr. Dean and Dr. Barringer are doing in New York and comparing it with what little work I have done and what I have seen around in the work of other surgeons, it seems to me that really radium is the answer to a great deal of the treatment we are trying to give these patients, but it seems to me that where it is possible to resect a bladder tumor widely that may be the most favorable thing to do. But certainly where resection cannot be done, I am thoroughly convinced that radium properly used as it is in the Memorial Hospital in New York, offers the best chance of cure or prolongation from recurrence.

I think that as a matter of fact, as has been said before, people like Dr. Dean and Dr. Barringer who are thoroughly skilled in the use of radium and who have a practically unlimited quantity of radium at their command, can treat these cases better than most of us who have not the skill and who have not the radium. Most of us cannot get half as much radium as we should use.

I would like Dr. Dean to be more specific about the removal of hypernephroma of the

kidney in the presence of metastases. I think that after the removal of the big tumor of the kidney, even in the face of metastases, the patient is given a lease of life which may go on for some time during which time he gains weight and strength and is more happy than he would otherwise be. I understood Dr. Dean to say that it would be harmful to use fulguration on bladder tumors. I agree with him fully in the open bladder but I am not convinced that it is harmful, in fact I am sure it is curative, in cases of small growths of the bladder which can be gotten at with the cystoscope. I have had several cases in which I have actually cured, in the sense that they have not recurred for many years, cases of small growths, probably some of them malignant, in the bladder. Of course, under those conditions it is sometimes not possible to get out a piece for biopsy or if one does get a piece it does not show the true nature of the growth but I feel that there have been a good many of them that have been cured.

DR. A. L. CHUTE: I have enjoyed Dr. Dean's paper very much and with Dr. Graves I was very much pleased to have him accentuate the tendency which certain bladders have to produce papillary growths of the benign or malignant type. I reported a man not long ago whose history had extended over a period of 16 years, with the removal of four different bladder growths; a carcinoma near his left ureter in 1911; a papillary growth near his right ureter by fulguration in 1916; a growth near the left side of his bladder outlet in 1926, carcinomatous in type, and after its recurrence in 1927, a total cystectomy with fatal outcome; with the exception of this last growth all seemed to arise *de novo*. I have recently seen a man from whom I removed a growth of papillary type, microscopically papillary carcinoma, near the *left* ureter in January of this year, 1931, and from whom I removed, within a month, two papillary growths on the right side of his bladder, one fairly low down. They were called "papillomas, potentially malignant". There was no evidence of recurrence of the former growth. I think, as in the case of the reformation of renal stones by certain kidneys, that many bladders have a special tendency to the formation of bladder tumors; we should consider that possibility.

I should be interested to know more in detail about the results of the radium treatment of tumors of the bladder and prostate. I wonder if Dr. Dean is not a little overenthusiastic about the part played by the radium. In the case of tumors of the bladder I have had patients live as long as 12 and even 18 years after their thorough surgical removal, and I believe that surgical removal, where we can do it, is the desirable thing, and radium reserved as an adjunct or for the cases in which surgical removal is not possible.

It is my experience that if the change is sufficient so that we can make the diagnosis of cancer of the prostate, there is but one thing we can hope to do, and that is to remedy the element of obstruction at the bladder outlet. I have operated upon some 200 or more cases of this sort and had one man, who was reported as having carcinoma microscopically, who lived 18 years and died last year of cardiac thrombosis. Presumably he was cured if the microscopic examination can be depended upon. Others have lived as long as eight and nine years after operation and died of the progression of the disease; there is the greatest difference in the malignancy of these growths, not always indicated by the microscope. My cases have been subjected to various sorts of operation, mostly the perineal or suprapubic removal. In one a total removal of the prostate was done; in some the punch was used.

If one believes, as my experience has taught me to believe, namely, that the only thing we can help in carcinoma of the prostate is the element of backpressure, it seems to me that the use of radium *alone* is of doubtful utility. It has never seemed to me that it could in the least influence the element of obstruction. The use of radium introduced through the urethra, as it was first used, seems to me absolutely irrational, and I have seen at least one very unfortunate result. The putting of needles through the perineum likewise seems to me an inaccurate procedure. To open a bladder for no other purpose than to implant radium seeds or needles seems to me to be missing an opportunity for the removal of at least a part of the growth, and I think that the more one removes, other things being equal, the more he relieves the obstruction and also the better the prospect of affecting the rest by the radium. I can see no disadvantage to radium carefully used as an adjunct to operative measures, but it has always seemed to me that the use of radium alone was of doubtful wisdom, and the mere fact that some people live for a considerable time following the use of radium does not in the least mean that the disease has been affected by the radium. Then another weak point in the estimation of the value of radium has been the relatively few cases in which there has been a pathologic examination.

Besides any physical advantage that radium might have, when used as an adjunct to surgery, I have used it not infrequently for its moral effect, since in the popular mind radium is supposed to have a great curative influence on malignant disease. It has seemed to me that many people who knew they were suffering from cancer have derived a good deal of comfort from the fact that radium had been used. I do not

think we are going to be able to settle the absolute use of radium until we have some more definite way by which we can measure its effect.

DR. COLBY: I enjoyed Dr. Dean's talk very much indeed. I have never been to Memorial Hospital but I have that to look forward to.

I think that before radium is widely used the people who start out to use it should have more experience with what it actually does. It is a tremendously powerful agent. It has been my privilege this last year to follow the carcinoma of the cervix cases at the Palmer Memorial Hospital who have had heavy doses of radiation. Quite a number of these cases have extensive burns of the bladder following radiation of the cervix. These burns occur sometimes a long time after the primary radiation. Dr. Smith and I at the Huntington Hospital have seen cases where the burn has occurred over three years after the radiation. It is not uncommon to have fairly large ulcers in the bladder occur a year or more after radium has been put into the cervix. That simply is to illustrate the point that radium is a powerful agent, that the extent of its damage is impossible to know always, and that we are dealing with something which I think even the men most familiar with it do not actually understand.

As another illustration, this spring at the Massachusetts General Hospital I operated on a recurrent papillary carcinoma of the bladder. The tumor was one of evident low malignancy, the recurrence having taken a long time to develop. However, at the time of operation, the bladder tumor was fairly extensive, and involving the left lateral wall of the bladder and extending down to and beyond the ureteral orifice on that side. The tumor was approached through a suprapubic cystotomy. A fungating mass was removed with the diathermic current in order to get at the base. The base was possibly 3.5 cm. in diameter. It was decided that radiation should be used and a comparatively large dose should be given to this patient. Gold seeds were put in the tumor and the tumor effectively covered, as Dr. Dean has outlined to you. This patient had, however, only about 2600 mc. hours which was not an excessive dose but thorough enough to cover the tumor. The patient did well in his convalescence and left the hospital. As I remember it, about six weeks after he left the hospital, this patient went to his own local hospital with a pain in his abdomen and it was found that he had a perforation of his bladder. That was very evidently due to radium slough as well as I could determine from the findings at the time of operation there at the hospital—there was no tumor left, but it was quite evident that sloughing tissue had perforated the abdominal cavity. This is simply another illustration of the powerful effect of radium and serves to show that it should not be used indiscriminately without some appreciation of what this agent can do.

DR. DEMING: We in New Haven usually have our ears turned toward New York for radium news. They always have new procedures in regard to the use of radium. (However, after reading my mail yesterday, I was thoroughly convinced that the price of radon seeds has not been affected by this period of depression.) We have followed their treatment for carcinoma of the bladder and have had surprisingly good results by the implantation of radon seeds through the operative wound.

I am interested in Dr. Dean's results with respect to radiation of renal tumors because of a case which I had three years ago; a man of 48 who had a very large tumor of his kidney—typically carcinoma, with frank bleeding—which at operation proved to be so large that it could not be removed. I tied the ureter and applied deep x-ray therapy. That was on the tenth of October, three years ago. The man now is working and apparently well and still maintains a tumor about half the size of that which was found at operation. I would like to ask Dr. Dean if he has had any experience with radiation of these tumors of the kidney after ligation of the ureter?

Dr. Dean has emphasized two points which are to my mind basic in the treatment of cancer with radiation, the first, the general building up of the patient and the second, supporting the red blood deficiency. It seems to me that these two factors have been insufficiently emphasized in treating all cases of malignancy.

DR. QUINBY: It is worth emphasizing that the Memorial Hospital, as all of us know, is instituted primarily so far as possible to accumulate data in regard to the treatment of malignancy by any of the high frequency methods, especially by x-ray and radium. Emphasis is not put on general surgical extirpation excepting in so far as that seems to be warranted.

A really great work is being done. The whole group of men there, of which Dr. Dean is a shining example, are doing their best to evaluate for us, more general individuals, what can and what cannot be done by treating tumors by radiant energy. The results of their work, as you have just heard, are most interesting. However, it does not pretend to represent, I believe, the middle course, though it is, undoubtedly, the best that can be done by these methods. All of us are frequently seeing individuals who are suffering from cancer of the genitourinary tract in one form or another. Shall we use some one of these methods of which Dr. Dean has so ably told us, or shall we not? This question cannot be answered till we have at hand the exact findings after examination of

each individual patient. I am quite sure that I am expressing Dr. Dean's opinion correctly when I say that there are many instances of malignancy which are more amenable to surgical extirpation than to radiation. Surgical extirpation in a great many instances will have as its result a better condition for the patient than any form of radiation, either by radium or by deep x-ray. This is still true not only in regard to cancer of the genito-urinary organs but to cancer anywhere in the body. I mention this, not in deprecation of Dr. Dean's remarks, but to call attention to the fact that surgery is not to be given up as a method of treating these deplorable conditions. However, the decision should always be based on the evidence at hand, and the vast amount of material that is being collected in Dr. Dean's hospital is invaluable and not to be duplicated in any other institution in the world with which I am familiar. They have set themselves to this problem, and they are carrying it out in a most admirable fashion. I wish to compliment Dr. Dean on his good work and to offer him my congratulations.

DR. DEAN: The gold seeds which are inserted into apparently normal bladder mucosa in the zone surrounding the tumor base, are placed about ½ cm. deep. We have not as yet had a vesicovaginal or vesicorectal fistula following the treatment of a bladder carcinoma.

We drain bladders for only a short time. A large drainage tube is placed in the bladder at the time of operation. It is usually withdrawn in about four days when there is no longer any danger of blood clots forming.

Metastases from carcinoma of the bladder are not seen so frequently as metastases from tumors of the prostate, testis or kidney. However, we have seen all of the long bones involved as well as the scapulae, the bones of the pelvis and skull. Metastases seem to be associated more frequently with the flat, infiltrating tumors than with the papillary type.

We have practiced the suprapubic approach to carcinoma of the prostate and have had a certain amount of success in embedding radon seeds evenly throughout the tumor in these cases. I do not emphasize the importance of the method because we have not had enough material. It was somewhat surprising to me to learn that in nearly all of these patients we would encounter a considerable thickness of apparently benign hypertrophy projecting into the bladder. The radon needles must first penetrate this 2-3 cm. of tissue before reaching the cancerous tissue of the posterior lobe.

Perhaps one of the greatest difficulties in the diagnosis of teratoma testis is that the physician does not have cancer in mind when making the examination. Frequently when a testicular enlargement is of a questionable nature, the true malignant character of the disease is ascertained by finding metastases in a routine examination of the abdomen, chest or left supraclavicular fossa.

We do not advocate resection of bladder cancers because we believe that radon implantation is a more effective treatment. Of the bladder cancers treated at the Memorial Hospital, the trigone was invaded in 65 per cent. In many instances the bladder neck was affected as well. It seems to us that the only resection applicable to these cases would be a total cystectomy with its high primary mortality and unpleasant period of survival. To evaluate as well as possible the use of radium, we have never practiced resection. We have placed our entire dependence upon radium. On the basis of this experience we believe that if radium is available, total cystectomy is not justified.

We would attempt to remove a hypernephroma in the presence of metastases only when the patient was bleeding to death and when external radiation had failed to check the hemorrhage. If external radiation is given even in comparatively light doses, the growth will usually regress. I think I mentioned the danger of starting fresh bleeding by breaking down the delicate blood vessels of this tumor.

I do not know how many cases of carcinoma of the bladder have been cured by fulguration alone. Very likely some of the more superficial tumors may have been. On the other hand we see many cases in which fulguration has been applied to bladder cancers with the same effect as water poured upon a plant,—subsequent growth was more rapid and widespread.

In response to Doctor Chute's observation, I would say that patients have undoubtedly been cured by having cancerous prostates removed by operation. I fear that not many of our patients would have been so successful because 98 per cent of them were found inoperable at their first visit. However, the important question is how large a percentage is cured by each method of treatment. I think we will learn this only when we have carefully compiled data covering large numbers of patients. The Bladder Tumor Registry of the American Urological Association is gradually accumulating much valuable data. Each of us should register all of his cases of bladder tumors with as much detail as possible. I suggested that a registry be started for all types of genitourinary cancers. I am afraid that the suggestion was premature.

I am interested in the case reported by Doctor Colby in which he found a radium burn of the bladder following radiation applied to the cervix uteri. I described this lesion a few years ago. Up to the present I have seen about 90 cases. Doctor Colby mentioned that these ulcers never

occur less than a year after radiation therapy. It seems to make no difference what type of radiation is given the uterus, and in many cases the total dose has seemed comparatively insignificant. Gynecologists have recognized this complication for years and they take all precautions to prevent it. In spite of their efforts to keep the bladder out of the field of radiation, the bladder injury occurs in a certain small percentage of cases. The lesion is the result of an obliterative endarteritis. It is of importance to us as urologists because these patients are in the cancer age and suffer with polyuria, dysuria, and hematuria. Cystoscopic examination shows an ulcerated condition of the bladder usually impossible to distinguish visually from cancer. The diagnosis must be made by biopsy. If one should employ any of the destructive types of treatment applicable to cancers, a fistula would promptly result.

We have never radiated a hypernephroma, Doctor Deming, after ligation of the ureter.

The ineffectiveness of radiation when the condition of the blood is poor seems to be of fundamental importance. We learned of it in this way:—A study was made of the length of time required for the formation of an erythema on the skin of patients after different applications of radiation. It was found that no erythema would appear on the skin of those patients who were anemic. At the same time it was noted that these patients did not respond to radiation applied to their tumors. When the blood had been built up the test erythema appeared and response to therapeutic radiation followed.

We never treat the base of a bladder cancer with any form of fulguration or cautery. We employ an electric cautery snare to remove the intravesical projection and expose the base of the growth but for therapy we depend entirely on radon.

There is much in what Doctor Quinby says regarding the advantages we enjoy at the Memorial Hospital. Our clinical material is extensive. There is practically an unlimited amount of radium available. We do not have to curtail dosage because of the patient's limited means. Most important of all is the close coöperation between the laboratory and clinical branches. Certainly in our experience the successful treatment of cancer requires teamwork from several specialists.

In closing I wish to apologize if I have seemed dogmatic. Such statements were made in an effort to be brief. Like the game of golf, the treatment of cancer is a humbling occupation. Possibly you can sense from the general trend of my discussion that our efforts are definitely along the lines of conservatism. Perhaps you may think some of our methods are fussy or even labored. On the other hand, I am certain that the mortality from cancer will not be lowered by devising operations of a still more radical nature. I think in general the best attitude to take is that of Doctor Keyes, who suggested that the more malignant the disease, the more benign should be the treatment.

## THE TOURNIQUET NOW REGARDED AS OUTLAWED

Reports from London are to the effect that tourniquets have no place now in emergency service. As an illustration the report contained the opinion of a Belgian physician, Dr. M. Stassen, who has had a long experience with many cases of compound fractures and other injuries in which he has found that tourniquets are not necessary for the control of hemorrhage. He claims that the use of a tourniquet is a frequent cause of shock and gas gangrene completely stopping the blood circulation in the injured limb, thereby promoting infection and preventing nutrition of the structures while it is applied. His opinion seems to have been approved by several surgeons in attendance at the sixth International Congress of Military Medicine and Pharmacy.

## THE PROBLEM OF DENTAL ILLS

E. L. Bishop, M.D., Tennessee State Commissioner of Health, is chairman of the committee on public health organization of the White House Conference on Child Health and Protection. A report recently issued by the committee states that federal, state and local health organizations are in a position to exercise influence in all educational health activities. The report refers to the influence of dentistry on health and contains the statement that there are 252 dental clinics operated under the direction of boards of education, 134 under boards of health and 483 operated jointly by boards of health and boards of education. The committee claims that colleges of dentistry and all dental organizations have a definite duty to perform which will be of the greatest assistance in preventing disease and promoting health.

A coöperative spirit has been shown by the hospitals of the country. It has been found that most governmental hospitals provide dental service and this plan is being followed by many local hospitals under the administrative control of boards of health or health officers.

## THE COST OF HOSPITAL ADMINISTRATION IN NEW JERSEY

At a meeting of the New Jersey Hospital Association William J. Ellis, State Superintendent of Institutions and Agencies, informed the members present that during the last year $15,000,000 had been expended in New Jersey for the support of hospitals. The number of patients treated in New Jersey hospitals totaled 245,000. Of the amount expended $7,000,000 was for free service.

# INVAGINATED MECKEL'S DIVERTICULUM

## Causing Partial Obstruction of Ileum

BY JAMES C. MC CANN, M.D.*

### INTRODUCTION

A MECKEL'S diverticulum represents the persistence after birth of an embryonic structure which ordinarily involutes and disappears by the fifth or sixth month of fetal life. Its presence may cause surgical crises of such diversity and severity that Fitz[1] considered it a greater menace to life than the appendix. The literature contains few references to simple invagination of a diverticulum into the bowel, dissociated from attendant complications such as intussusception of the intestine. This report concerns such a case of simple inversion of a Meckel's diverticulum. Inflammatory processes at the base of this inverted sac had closed its lumen, and produced a polypus-like structure which protruded into the intestinal canal. This finding verifies the hypothesis that some polyps of the small intestine may take origin from an invaginated Meckel's diverticulum.

This abnormality, diverticulum, was first recorded as having been observed, by Lavator[2]. In the year 1700 Littre[3] described a structure which was, probably, a true congenital diverticulum, but which lacked the usual muscular coats. In 1701 Ruysh[4] and Mery[5] both recorded the phenomenon, the former presenting an illustration of it in his "Thesaurus Anatomicus", and, for the first time, called it diverticulum. Morgagni[6] reported several instances of diverticula of the ileum in his tract on the "Seats and Causes of Diseases", and suggested, but did not clearly state, their embryologic significance. To John Frederick Meckel belongs the credit, as Hunt[7] says, for the best description of this structure, for reasoning out its origin and for recognizing its clinical importance. It has been designated since by the name of this man, who in 1812 was the first to focus attention on its occurrence, and importance as a cause of abdominal affections. Meckel[8] propounded the theory that a diverticulum was a remnant of the embryonic vitelline duct, which had failed to regress normally to complete obliteration.

The anlage of all organs, in the embryo, rests in the three primitive layers — the ectoderm, mesoderm, and entoderm. The entire alimentary canal evolves from an infolding of the splanchnopleure, a layer produced by fusion of the entoderm with the inner of two layers into which the mesoderm splits. The yolk sac, with its vitelline or omphalomesenteric duct, has evaginated from this canal, at the juncture of the fore-gut and hind-gut, by the third week of embryonic life. This structure acts, by its attachment to the abdominal wall, as a pivot around which the developing intestinal tract rotates. The yolk sac degenerates about the fourth to sixth month when the abdominal wall closes, and the allantois takes over its function. Simultaneously the vitelline duct involutes to fibrous strands running from the intestine to the umbilicus, and out from the umbilicus in the umbilical cord. Instead of regressing normally to obliteration, remnants may persist in any degree from simple strands between the intestine and umbilicus, to a diverticulum pouching from the intestine, or even to a perfect tube —a fecal fistula—between the intestine and umbilicus, as described by Shepherd[9].

A persistent Meckel's diverticulum is found in two or three per cent of autopsies. Balfour[10] reported 15 diverticula found in 10,600 laparotomies performed at the Mayo Clinic. Only five of these constituted the cause for performing the operation. In the other instances, the diverticulum was found and removed in the course of an operation for other pathologic conditions. The sex ratio of incidence is three males to one female. The structure usually is located, in the new-born, twelve to eighteen inches proximal to the ileocecal valve. In adults it may be found anywhere between the pylorus and the ileocecal valve, but usually in the lower fourth of the ileum. Ordinarily it arises from the bowel opposite the attachment of the mesentery, but may arise at either side, or between the two leaves of the mesentery. Lamb[11], in a series of 109 cases, found that the average diverticulum is two inches long. Its shape is usually conical, but it may be bulbous, hammer-shaped or spherical.

### PATHOLOGY

Persistent diverticula may terminate with diverse complications, which are conveniently grouped under three general headings:

I. Unusual forms; umbilical polyp, enterocysts, calculi, foreign bodies, polyps, tumors.

II. Inflammatory; catarrhal and gangrenous. Typhoid, peptic, tuberculous ulcers.

III. Intestinal Obstruction; band, loop volvulus, pedicle, herniae, intussusception, invagination.

A characteristic type of complication usually arises from a specific type of diverticulum. If the proximal end of the vitelline duct only is obliterated, and the distal end is not, a mucous

*McCann—Surgeon, Fallon Clinic and St. Vincent Hospital, Worcester. For record and address of author see "This Week's Issue," page 1113.

tract to the umbilicus may persist, and, by pouching out form a bright red, umbilical polyp as described by Cullen[12]. If both the proximal and distal segments are obliterated, a persistent intermediate portion with its pent up secretions may form an enterocyst. Eisendrath[13] reported such a case which gave rise to a large tumor analogous to a hydrops of the gall-bladder.

Stercoroliths and acute inflammation in a diverticulum may mimic acute appendicitis. The meagre blood supply to a diverticulum, however, renders it more liable than the appendix to gangrene and perforation. Acutely inflamed diverticula have an associated mortality of 40 per cent. Typhoid, tubercular and peptic ulcers occurring in this structure may perforate and cause a fatal peritonitis. The presence of peptic ulcers is explained by the finding of gastric epithelium in the tip of 16.6 per cent of diverticula. Schaetz[14] who reports this figure, also found pancreatic tissue in 38.5 per cent of diverticula.

Acute intestinal obstruction constitutes the most frequent surgical complication arising from diverticula. Wellington[15] found it to occur in 44 per cent of 326 operated diverticula which he collected from the literature. Richardson[16] reported that, of 118 cases of intestinal obstruction from all causes operated upon at the Massachusetts General Hospital in the decade 1910-1920, three per cent were caused by diverticula. Halstead[17], however, believed that six per cent of all obstructions are caused by this structure. Lichtenstern[18], also, found that of 1134 cases of acute intestinal obstruction in his series, and of the combined report on 991 cases observed by Haven, Duchanssoy and Brinton, a Meckel's diverticulum was the cause in six per cent.

The mechanism of obstruction is variable. A long diverticulum, adherent to the intestine or umbilicus, may act as a band and cause strangulation or secondary volvulus of the intestine. A free pouching diverticulum may become incarcerated in a hernial sac and obstruct the bowel. Some become invaginated, and act like a polyp, tending to produce intussusception of the intestine. Lower[19] states that up to 1925 the literature contains reports of twenty-five clearly defined cases of obstructing intussusception due to an inverted Meckel's diverticulum. At the Victoria Infirmary, Drummond[20] reports that seven per cent of the operated cases of all types of intussusception were caused by this mechanism. This serious complication carries an operative mortality of 50 to 60 per cent.

### CASE REPORTS OF SIMPLE INVAGINATION

Simple invagination of Meckel's Diverticulum has been observed but rarely. Eighty-two per cent of inversions are complicated by intussusception of the adjacent bowel with intestinal obstruction. So unusual is simple, uncomplicated invagination that Kaufman[21] simply states of this aspect of diverticula, that, "inversion into the bowel lumen is very rare; it may lead to intestinal invagination and death". A brief summary of the cases found in the literature follows:

I. MARONI[22]: Operated upon for torsion of the intestine. Died. Autopsy; a second complete obstruction in lower part of ileum due to Meckel's diverticulum inverted into lumen of bowel. Inversion caused by polypus in diverticulum.

II. EWALD[23]: Unoperated. Several attacks of violent pain and constipation with vomiting. Died in spell. Autopsy: Invaginated Meckel's diverticulum with inflammatory stenosis of bowel, above attachment of diverticulum, which just admitted a lead pencil. Small perforation in bowel caused suppurative peritonitis.

III. HELLER[24]: Unoperated. Autopsy; perforated ulcer of stomach. Movable cord in lumen of intestine with marked swelling at end. Invaginated Meckel's diverticulum with accessory pancreas at apex.

IV. HELLER[24]: Unoperated. Autopsy. Pyonephritis. A worm-like body, 10 cm. long, covered with mucous membrane, projecting into the intestine 180 cm. above ileocecal valve. Inverted Meckel's diverticulum.

V. DEQUERVAIN[25]: Operated upon for acute obstruction with abdominal pain and fecal vomiting. Died. Obstruction from invaginated Meckel's diverticulum.

VI. KÜTTNER[26]: Operated upon, enteroenterostomy for obstruction. Died. Autopsy; Polypus-like structure, 7 cm. long, projecting into and obstructing small intestine. Invaginated Meckel's diverticulum.

VII. TREVES[27]: Describes a specimen of invaginated diverticulum of ileum which is in Guy's Hospital.

VIII. STONE[28]: Operated upon for prostration, small abdominal tumor, vomiting, blood in stool. Operation: colon and part of ileum filled with blood. Inverted diverticulum 5 cm. in length, 2 cm. in diameter, obstructed small intestine. Recovered.

IX. DOURIEZ[29]: Operated upon for abdominal pain, obstruction fecal vomiting, blood from bowel. Operation: Intraintestinal tumor, 50 to 60 cm. above ileocecal valve. Proximal loops of bowel congested and dilated. Resected. Invaginated Meckel's diverticulum, edematous with black plaques. Recovered.

X. GROSS[30]: Operated upon for abdominal pain, vomiting, visible intestinal peristalsis, mass size of prune near McBurney's point. Operation: irritated gas filled loop of small intestine, obstructed by small intramural infundibulum opposite insertion of mesentery. Invaginated Meckel's diverticulum with a thickened wall. Resected. Recovered.

XI. AUTHOR'S CASE: The patient, a boy aged six years, was admitted to the Clinic service, St. Vincent Hospital, Worcester, November 22, 1930, complaining of spells of pain in the lower abdomen and vomiting.

*Family History:* The mother and father are living and well, with no knowledge of developmental anomalies in either family. There is another boy, aged three years, of good health and with no developmental anomalies.

*Past History:* The child was delivered normally, occiput presentation. Birth weight was twelve pounds. There were no anatomic abnormalities at birth, and the child developed normally. He had measles at three years of age. Occasional headaches.

*Present Illness:* From the time of birth until three years of age, the child was habitually constipated. He was given Castoria twice a day to produce daily bowel movements. The stool was always normal in size, shape and color, but very hard in consistency. From age one and a half years to three years—the latter half of this

Polyp-like structure — an inverted Meckel's Diverticulum. Specimen was fixed at its base to mesenteric border of inner aspect of bowel. The base shows the folds of ileal mucosa; the specimen itself was covered with smooth duodenal mucosa. It hung free in the bowel lumen, pointing distally.

early period of constipation—the mother noticed streaks of blood around the bowel movement. There was never any gross quantity of clear blood. After three years of age the bowels gradually became more regular, moving nearly every day without a cathartic. The bleeding ceased. Between three and five years of age the child was apparently normal and free from bowel irregularities.

At five years of age the boy began to complain of aching pain in the lower abdomen. It always occurred in the early morning. Five or ten minutes after arising, he would have severe persistent ache across the lower abdomen, which the parents considered to be an ordinary "belly-ache". While the pain lasted he had no appetite and could not eat breakfast. After he was about for fifteen minutes the pain would subside, his appetite would return, and he would eat a hearty breakfast. During the rest of the day there was no recurrence of pain, nor loss of appetite. During the early part of this fifth year the spells came infrequently, but increased gradually, until three months before admission they occurred daily.

During this fifth year the boy vomited occasionally. It always coincided with the onset of early morning pain. After vomiting a small quantity of green bile-stained material, he was relieved. There was no recurrence of the nausea or vomiting during the day. The frequency of the vomiting also increased, until at the time of admission he vomited once a week. Three weeks before admission he was very sick and vomited three times in one day. Otherwise the boy was bright and alert in school, advancing normally. He ate a good lunch and supper, slept well and played as actively as a normal child.

A month before admission he began to fail visibly. On returning from school, instead of running off and playing with his usual energy, he would throw himself into his mother's arms, saying, "I'm all tired out, Mother." He lost color and weight. One day his family physician, who had examined him repeatedly, considering atypical appendicitis, felt a lump in the right lower abdomen, and referred him to the Clinic for observation. He was watched for six days for the possibility of appendix abscess. The temperature did not rise above 99.5 degrees, and his pulse was normal. The mass disappeared on the sixth day and it was thought advisable to explore the appendix.

*Physical Examination:* The child was developed normally for his age. He rested comfortably in bed. Pupils reacted to light and distance. Tonsils were not enlarged. Teeth were in good condition. There was moderate enlargement of the cervical lymph glands. Chest was well developed, heart and lungs normal. Umbilicus was normal. The right lower abdomen was markedly tender, presenting a mass the size of an egg. This disappeared on the sixth day.

*Laboratory:* Urine showed moderate acetone and diacetic acid. Hemoglobin 70 per cent; white blood cells 16,200; polymorphonuclear leukocytes 84 per cent; large lymphocytes one per cent. Von Pirquet test was negative. Roentgenograms were not taken as an appendix abscess was suspected.

*Operation:* Low right rectus incision. The appendix seemed normal, certainly not diseased enough to account for the symptoms. The mesenteric glands were not enlarged. In the pelvis a small mass was caught in the fingers, but it slipped away. The bowel was drawn up, and a loop with a dilated and a collapsed portion was found. It was assumed that there had been an intussusception which was corrected by manipulation. Incidental appendectomy was performed. Again the pelvis was explored, the mass felt, caught and delivered. It was a polypus-like tumor within the lumen of the lower ileum, about a foot from the ileocecal valve. The bowel was incised longitudinally over the centre of a four inch segment in which the tumor was movable. An elongated polyp with a broad base, and covered with intestinal mucosa, was delivered. It was resected at its base, and this was sutured over. The longitudinal incision in the bowel was closed transversely with tannic acid catgut in two layers, reinforced by interrupted linen sutures. The convalescence was uneventful, and the boy was discharged on the fifteenth day. Since then his health and vitality have returned, and he has gained weight. He is free from all pain, nausea, and vomiting. His bowels are regular and there is no blood in the stool.

*Pathology:* Better described at this point than under operation, is the gross appearance of the operative field. The tumor was a polypus structure about six centimeters long. It was attached on the inner mucosal aspect of the mesenteric side of the bowel, by a broad base two centimeters in diameter. The free end of the structure pointed distally. On the outer aspect of the bowel a half inch lateral to the attachment of the mesentery, and corresponding exactly to the base of the polyp, was an oval, blind depression in the bowel wall, measuring eight millimeters in diameter and five millimeters in depth. This

undoubtedly represented the size of the lumen of the diverticulum when it became inverted in early life. Following is an additional report by Dr. F. B. Mallory, Pathologist, Boston, Mass:

"The gross specimen consists of a sac 6.5 centimeters in length and 2.5 centimeters in width. At the distal end there is a dimple simulating the opening in a cervix; otherwise specimen suggests a gallbladder. On opening there is a clear, yellow fluid and a lining of moist, glistening serous membrane. Microscopic examination shows the sac to be lined externally with a mucosal layer typical of that in the duodenum. It is infiltrated with numerous lymphocytes. In one area the smooth muscle layer back of the mucosa is spread apart by typical pancreatic tissue containing numerous islands of Langerhans. The subserous coat contains many blood vessels and is edematous. An interesting feature of this case is the inversion of the diverticulum so that the mucosa is external. Diagnosis: An inverted Meckel's diverticulum showing slight chronic inflammation."

## DISCUSSION

It is enlightening to interpret these pathologic findings in terms of the historical development of the symptoms. The habitual constipation during the first three years of life with blood in the stool, probably represents the period of invagination. Abt and Strauss[31] state that repeated hemorrhages, either bright red or tarry, are characteristic of inversion. The small pit on the outer aspect of the bowel, corresponding to the wide base of the polyp, denotes the early invagination of the structure. Chronic inflammation sealed the serosal surfaces of the neck of the diverticulum which became distended by the retained secretions. It enlarged and partially obstructed the ileum, causing the morning symptoms of pain and vomiting.

The mechanism of invagination has been discussed by those who have observed this phenomenon. Its rarity depends on the fact that to invert, the structure must hang free in the peritoneal cavity, whereas usually it has secondary attachments to the intestine, mesentery or umbilicus. Küttner thought that peristalsis of the diverticulum itself causes it to invert into the bowel. DeQuervain felt that sudden inversion is induced by negative pressure from the rapid flow of intestinal contents over the opening of the diverticulum. Drummond states that chronic inflammation in the mucosa at the base of the diverticulum causes it to swell and prolapse into the lumen of the intestine. The bowel attempts to expel it and causes bleeding and inversion of the other coats.

Gray[32] summarizes the theory as it pertains to our case when he says: "Now it has been noted that the mucosa of this structure is loosely attached to the muscular walls (Watson-Cheyne), so loose is it that the mucous coat alone can be invaginated. The consequent swelling of the mucosa and its separation by serous effusion from the muscular coat (aided perhaps by bacterial infection) produce a closure of the orifice into the intestine, and efforts to expel the accumulated contents succeed only in squeezing the mucous coat into the intestine, which would ultimately drag after it the muscular and serous coats also. The invagination would thus start at the neck or base; and the swelling is progressive on account of the contraction of the circular fibres behind, thus tending to prevent a return to the normal condition. Repeated attacks of inflammation or mechanical congestion in such an invaginated diverticulum, if an intussusception is not produced, will cause fusion of the now adjacent serous surfaces, and an intestinal polyp is produced. I think this may be the real origin of some, at any rate of the so-called high intestinal polyps, which are said to cause hemorrhage from the bowel and sometimes an intussusception. Specimens can be seen illustrating this transformation of an invaginated Meckel's diverticulum into an intestinal polyp, though more observations are of course necessary to establish such a statement."

Our case is reported as a rare instance of inverted diverticulum which substantiates the latter part of this theory. After invagination occurred, its paramesenteric attachment probably prevented intussusception of the bowel, by offering the resistance of the bulk of the blood vessels and the mesentery. With time, chronic inflammation fused the serous surfaces at the constricted base of the sac. The remaining serous surfaces did not fuse, resulting in a blind cavity in which serous secretions accumulated. This produced a distended, firm, polypus-like structure. With growth and the action of pulsion of the contracting bowel, it enlarged. As its size approached that of the lumen of the bowel, it presented a mechanical hindrance to the fecal current, causing the symptoms of partial obstruction.

## SUMMARY

A survey of the literature reveals simple inversion of a Meckel's diverticulum to be a rare phenomenon. This paper presents a review of ten cases reported in the literature, and a case of inversion operated upon by the author.

Persistent diverticula, which are found in two per cent of autopsies, give rise to diverse complications. Intestinal obstruction is the most common, and is produced frequently by intussusception of the bowel, secondary to invagination of a diverticulum. This is the causative mechanism in seven per cent of obstructing intussusceptions, and carries an operative mortality of fifty to sixty per cent.

Simple uncomplicated inversion is very rare, and in our case the serious complication of intussusception was probably averted by the paramesenteric location of the structure, and fortuitous surgery. Chronic inflammation had agglutinated the serosal surfaces at the base of

this inverted diverticulum, forming a polypus-like sac within the lumen of the ileum which produced symptoms of partial obstruction. This case presents proof of the hypothesis long held that some polyps of the small intestine take origin from an inverted Meckel's diverticulum.

REFERENCES

1 Fitz, R. H.: Am. J. M. Sc. 88: 30, 1884.
2 Lavator: Quoted by Bunts, F. E., Ann. Surg. 40: 536, 1904.
3 Littre: Mem. Acad. de Sc. p. 300, 1770.
4 Ruysh: Quoted by Bunts (Reference 2).
5 Mery: Mem. Acad. de Sc. 1700-01.
6 Morgagni: Translated by Alexander 1769.
7 Hunt, E. L.: Boston M. & S. J. 191: 722, 1924.
8 Meckel: Beitr. z. Vergleichenden Anatomie. 93: 1808.
9 Shepherd, F. J.: Arch. Pediat. 9: 55, 1892.
10 Balfour, Donald: J. Minnesota M. A. 31: 110, 1911.
11 Lamb: Quoted by Brennecke, H. A., Surg. Gynec. Obst. 16: 200, 1913.
12 Cullen, T. S.: Surg. Gynec. Obst. 35: 259, 1922.
13 Eisendrath: Quoted by Drummond, Ann. Surg. 55: 404, 1912.
14 Schaetz, Georg: Beitr. z. Path. Anat. u. z. allg. Pathol. 74: 115, 1925.
15 Wellington, J. R.: Surg. Gynec. Obst. 16: 74, 1913.
16 Richardson, E. P.: Boston M. & S. J. 183: 288, 1920.
17 Halstead, A. E.: Ann. Surg. 35: 471, 1902.
18 Lichtenstern: Ziemsen's Encyclopaedia of General Medicine 7: 1876.
19 Lower, W. E.: Ann. Surg. 82: 436, 1925.
20 Drummond, Hamilton: Surg. Gynec. Obst. 16: 656, 1913.
21 Kaufman, Edward: Spezielle Pathologischen Anatomie, 2, 571, 1922, Editions 7 and 8.
22 Maroni: Quoted by Küttner (Reference 26).
23 Ewald: Quoted by Küttner (Reference 26).
24 Heller: Quoted by Küttner (Reference 26).
25 DeQuervain: Quoted by Drummond, Ann. Surg. 55: 404, 1912.
26 Küttner, H.: Beitr. z. klin. Chir. 21: 289, 1898.
27 Treves: Quoted by Halstead (Reference 17).
28 Stone, Eric: Surg. Gynec. Obst. 37: 51, 1923.
29 Douriez M. H.: Paris chirurg. 14: 214, 1922.
30 Gross, Emil: Strassburg. Dissertation. 15: 1912.
31 Abt, I. A., and Strauss, A. A.: J. A. M. A. 87: 991, 1926.
32 Gray, H. T.: Ann. Surg. 48: 901, 1908.

## SUCTION TONSILLECTOMY

### Comments on the Waring Suction Technique

BY Z. WILLIAM COLSON, M.D.*

SINCE reading a recent article on this subject[1] the writer has done a hundred and twenty-four tonsillectomies by the Waring method, many of them on adults. Inasmuch as this technique is not widely employed in this section, it may be timely to comment on such a series of cases.

Waring claims that his method has the following advantages:—

(1) The technique is simple.
(2) It is applicable to all types of tonsils.
(3) The operation is rapid.
(4) There is less bleeding.
(5) It is an in-capsule enucleation.
(6) There is less opportunity for aspiration lung abscess.

Perhaps the greatest single objection to the method is that it requires special instruments and some form of suction pump. The only special instruments needed, however, are a set of three glass suction tubes of varying size. These tubes closely resemble in shape an ordinary straight stemmed tobacco pipe. Waring advises a large capacity suction apparatus, but the writer finds a small portable two-cylinder pump entirely satisfactory. A foot switch for the pump is a convenience but not a necessity as any attendant can operate the pump at the word of the surgeon.

The technique, in brief, is to place the mouth of the suction tube over the tonsil, between the pillars, and turn on the suction pump, drawing the tonsil out of its fossa. Then an ordinary tonsil snare, which has previously been adjusted over the shaft of the suction tube, is carried over the bell of the tube and tightened down, thus shelling out the tonsil in its capsule.

In a sense this technique is a modification of the Sluder method—using suction to pull the tonsil into the tube rather than finger pressure to force it through the fenestrum of the guillotine. For this reason it is likely that suction tonsillectomy will appeal most strongly to those operators who have already perfected their Sluder technique.

When using the Sluder method one is concerned lest he leave some tonsillar tissue, especially a small tab at the base of the fossa. With the suction method he must be careful that he does not include more in his snare than he wishes to remove. For this reason he selects the smallest tube that will accommodate a given tonsil, thus leaving no room in the tube for pillars, soft palate, or base of the tongue. This tendency of all soft parts in contact with the tube to worm their way into its mouth is a good fault, which can be controlled under direct vision either by shutting off the suction pump or by tightening down on the snare immediately after the tonsil slides into the tube.

If the proper sized tube is selected, there is practically no trauma to the pillars. In this connection, since one cannot always determine the size of a given tonsil beforehand, the writer finds it a good plan, after the tonsil has been engaged, to rotate the tube from side to side before tightening down on the snare. If a dimple appears to move up and down on the anterior pillar, the operator may safely assume that all of the tonsil has found its way into the tube and that he may proceed with the snare. On the other hand, should he rock the tube and see a mass roll up and down behind the anterior

*Colson—Ophthalmic and Aural Surgeon, Lawrence General Hospital. For record and address of author see "This Week's Issue," page 1113.

pillar, he should suspect that all the tonsillar mass has not been drawn into the tube. In such a case any attempt at snaring will probably cut the tonsil in two. First try to massage the tonsil into the tube with the index finger, as in the Sluder method. If this is not successful, cut off the suction, disconnect the tube, and proceed with the operation, using the next larger sized tube, as though the first application had never been attempted. When one is in doubt, he should not hesitate to take off a tube and reapply a more appropriate size.

The embarrassment of removing a uvula convinces one that it is the better part of valor to catch the tip of the uvula with a pair of tissue forceps as the first step of the operation, leaving the forceps in place until the snare is applied to the second tonsil.

In this series, a fair proportion of which showed embedded and adherent tonsils, only two pairs of tonsils were encountered which did not readily and completely come out in capsule. One of these patients had had four peritonsillar abscesses on one side and five on the other, all of them requiring medical attention. The tonsils were so adherent that suction could not lift them out of their beds and it was with difficulty that they were removed by dissection and snare. The other patient had large embedded tonsils and the space between the anterior and posterior pillars was very small. One could not place a tube large enough for the tonsils between the pillars.

There were perhaps a half-dozen cases in all in which the tonsil was cut in two by the snare. This presented no difficulty, however, as a second application of the suction tube pulled the tab out of its fossa, from which it was readily snared in-capsule.

A few of the patients had been operated on previously and this method seems well adapted to removing tonsillar tabs.

Five of the operations on adult patients were performed under local anesthesia and they did not seem to fear the sight of the suction tube as much as the average patient appears to fear a knife. The only distress felt during the operation was on the tightening of the snare, when the patient groaned and sometimes gagged. Afterwards he disclaimed any real pain, but described a dull, deep and disagreeable dragging sensation.

In simplicity and speed this operation compares very favorably with the Sluder method.

Perhaps the greatest single advantage of this technique lies in the fact that all intratonsillar pus and débris finds its way into the suction bottle and cannot possibly get into the trachea. This is very dramatically impressed upon the operator when he applies suction to a relatively innocent appearing tonsil and he sees the tonsil literally explode a cubic centimeter or more of pus into the tube. One has but to recall the large proportion of lung abscesses which follow tonsillectomies, as compared to all other causes of lung abscess, to concede the importance of keeping tonsillar débris from the trachea.

Lung abscess, as a condition following tonsillectomy, is not always diagnosed as such. In regard to the path of entrance of the infection —as to whether it is by way of the air passages, the veins, or the lymphatics—there is considerable divergence of opinion. There is no question, however, but that the utmost precaution should be taken by the operator to see that no infective material reaches the lungs by way of the air passages. In the suction procedure the vacuum tube is placed over the tonsil without any preliminary manipulation and any tonsillar débris which might be present is drawn into the suction bottle. Even after the snare is tightened down, the tonsillar mass is held within the tube by suction. Thus it is next to impossible for any infective tonsillar material to reach the trachea.

There is only one type of tonsil encountered in this series which is not ideally adapted to the method—the large embedded tonsil which is almost completely covered by closely spaced pillars. This type of tonsil can be enucleated by suction, but not without injury to the pillars, for the simple reason that a tube large enough to accommodate the tonsil is not small enough to be placed between the anterior and posterior pillars.

The writer feels certain that operators who will employ suction tonsillectomy in a dozen or more cases will select this procedure as their usual method of choice. Particularly will this be true of those who already have a working knowledge of the Sluder technique.

REFERENCE

1 Waring, J. B. H.: Suction tonsillectomy. Arch. Otolaryng. 12:31 (July) 1930.

## ISAAC JUDAEUS AND HIS TIMES*

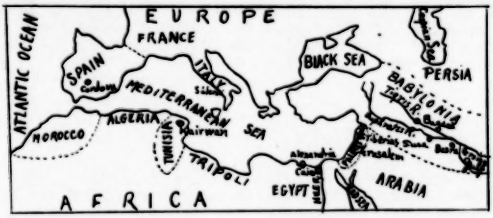
BY HYMAN MORRISON, M.D.†

THE acquisition by the Boston Medical Library under the Solomon M. Hyams Collection of Jewish Medical Works of a Latin manuscript of the treatise "On Fevers" by Isaac Judaeus gives occasion for a brief statement as to the life and times of this early medieval Jewish physician. That a work written a thousand years ago should still command our interest in itself speaks for the worth of its author. It was written originally in Arabic, was twice translated into Hebrew, and in 1070

*Read before the Boston Medical History Club, January 19, 1931.

†Morrison—Visiting Physician, Beth Israel Hospital. For record and address of author see "This Week's Issue," page 1113.

into Latin; Latin translations were printed in 1507 and in 1576. Our manuscript was written in the thirteenth century at Montpellier. It is a complete treatise on fever based on the writings of the ancient physicians, especially Hippocrates, and stands out as the best account on this subject available in Europe during the Middle Ages. Sir William Osler, in his account of the medieval medical curriculum, mentions that at Oxford and most of the continental universities the books read were the "Tegni" of Galen, the "Aphorisms" of Hippocrates, the "Liber Febri" of Isaac and the "Antidotarium" of Nicolaus Salertinitanus. Roger Bacon, about 1268, mentions among "Medical authorities . . . Hippocrates, Galen, Constantine, Rhazes, Haly, Isaac, and similarly experienced physicians."




Northern Africa, Southern Europe, and Southwestern Asia in Early Middle Ages.

In the middle of the thirteenth century the Faculty of Medicine of Paris put the stamp of their approval upon the following list of books for study by the medical students: At the head of the list were the Aphorisms, the Prognostics, and the Acute Maladies of Hippocrates; then followed Johannitius' (Honain) Introduction to Galen, Theophilus' Anatomy based on Galen, the same author's book on Urine, Philaretus on the Pulse, Giles de Corbeille's Treatise on Urine in Verse, as also his Signs of the Pulse, and finally also the medical works of Isaac.

Isaac is known in the literature either as Abu Yakub Ishak Ibn Suleiman al Israili, Yitzchak ben Shlomo, or Isaaeus Judaeus, according to the language used, Arabic, Hebrew or Latin. In English medical literature he is referred to either as Isaac Israeli or as Isaac Judaeus. He was born in Egypt before 850 C.E., the dates of his birth and death not being known with certainty, but he is said to have lived to the age of over a hundred years. By that time, two hundred years after the rise of Mohammed, Islam had gained control over the territory extending from Persia in the East through Asia Minor and northern Africa to Spain in the West, though divided into three Caliphates. Throughout this vast domain many Jewish settlements enjoyed, since the destruction of Judaea by the Romans, and even before, relative peace and even considerable internal autonomy. The great strongholds which kept them together were the system of schools and seats of learning, scattered both through the East and West, which withstood all political upheaval and guarded them from the surrounding flood of barbaric ignorance. The outstanding cultural centers were at Tiberias in Palestine, at Sura in Babylonia, at Cairo and Alexandria in Egypt, and later at Bagdad, Babylonia, at Kairwan, near Tunis, in northern Africa, and at Cordova in Spain. With the Mohammedan termination of all vestige of political autonomy among the Jews, the Gaonim who presided over these schools gradually became the great authorities on all religious and legal questions. The schools were large and popular, and instruction was carried on by means of discussion and debate. All sorts of subjects were included in the course of study,—ethics, metaphysics, jurisprudence, and all the sciences in extant, particularly astronomy and medicine. It was a principle among the rabbis and instructors not to make their study a means of livelihood, and thus many of them were tradesmen and artisans, and many were physicians.

Medical tradition had always run deeply among the Jews; it dates back to the time when Moses laid the foundation for modern preventive medicine; it was strengthened by the large mass of medical lore included in the Talmud, the compilation of which was completed by the beginning of the sixth century of the present era; and it was carried on by the numerous Jewish physicians through the Middle Ages, who exerted a most important influence upon the Arabs especially in the early period of their political domination, by preserving and transmitting the ancient knowledge. Unlike the German invaders of the Roman Empire, the Arabs were deeply appreciative of the Graeco-Roman civilization,—especially in the sciences. The Christian and Jewish physicians were their teachers in medicine and science, and encouraged the translation of the great Greek physicians, thus keeping the Greek medical tradition from dying out. Not till

the end of the ninth and the beginning of the tenth centuries did the Arabs themselves begin to contribute to medicine.

One of the first of these Jewish physicians to whom is due probably more than to anyone else the preservation of old scientific writing and the cultivation of arts and sciences by the Mohammedans, is Maser Djqwah Ebn Djeldjal, of Basra. He prevailed on Caliph Moawia I, whose physician he had become, to have many foreign works, and especially those written in Greek, translated in Arabic. To him is due the translation of Pandecta, containing the first good description of smallpox by Haroun (a physician of Alexandria), which was made at the end of the seventh century. Only fragments of this translation are preserved through Rhazes. In the eighth century Bagdad was founded near the site of the old city of Babylon, under the Caliph Almansor and his successors. There a great medical school and hospitals were organized, and a series of translations from the Greek masters were carried through. It thus became the cultural center of the Arab world and also the seat of cultural authority for the many scattered Jewish settlements. In northern Africa, Kairwan, the city where Isaac lived half of his life, became a seat of learning which linked the Jewry of the East with that of the West, and Isaac Israeli stands out as a fine representative of Jewish scholarship of this period.

Isaac was born in Egypt in the middle of the ninth century. He studied natural history, mathematics, astronomy, and medicine, among other things, so that he was reputed to know all the "Seven Sciences." He was a contemporary of Saadia, also a native of Egypt, who was called to be Gaon in Sura, Babylonia, first philosopher in mediaeval Jewry, first Hebrew lexicographer and grammarian and translator of the Bible into Arabic. It was he who inspired Israeli with the love for the study of the Bible.

In Egypt Isaac became distinguished as an oculist and made observations on ophthalmia and trachoma. About 904 the Caliph Ziyadat Allah of Kairwan sent him a present of five hundred gold pieces and invited him to become his court physician. There he studied general medicine under Ishak ibn Amran of Bagdad, the latter a grandson of the great Jewish physician by the same name, who had helped to found the school at Bagdad. Five years later he stepped into the service of Obaid Allah Al-Mahdi the Fatimide Caliph, when the latter became master of northern Africa with Kairwan as the capital. He became a favorite of the Caliph who enjoyed his learning and wit and power of repartee. Under the patronage of Al-Mahdi his professional and literary activity gained for him renown as physician and scholar, and attracted a large number of disciples, two of whom became distinguished enough to come down in history,—Abu Ya'fer ibn Al-Yassar, a Mohammedan, and Dunash ibn Tamin, a Jew. An Arabian scholar of Cordova wrote of Isaac as a man of the highest character, who though much occupied at court was indifferent to wealth and personal advancement,—"He lived over one hundred years, never married, and did not seek wealth. He composed valuable works which cannot be weighed with gold and silver."

Isaac wrote in Arabic, though he was well versed in Hebrew,—for Arabic had become the language of literary and scientific communication. He was versatile, and in line of tradition among Jewish scholars he wrote not only on medicine but also on ethics and philosophy. His medical works were translated into Latin between 1070 and 1087 by the Monk Constantine of Carthage, who claimed their authorship for himself. It was only after more than four centuries that an editor of those works discovered the plagiarism and printed them under the title of "Opera Omnia Isaci" (Lyons 1515) erroneously including, however, works of other physicians. Constantine must be given credit, however, for first introducing Arabian medicine into Europe. Isaac's works were soon taken up at Salerno, and from that center their influence spread all over Europe. These works were also translated into Hebrew, and some into Spanish.

### ISAAC'S "BOOK ON FEVER"

His best known medical work is the "Book on Fever." He valued it most among his works for when asked whether he did not regret not having children, he replied "I shall leave my 'Book on Fever' as my posterity." Through the courtesy of Professor Harry A. Wolfson of Harvard we have available the table of contents of the printed edition of this work in the library of the Jewish Theological Seminary in New York entitled "Liber febrium ysaac israelite filli adoptivi Salomonis regis arabie." The designation of Isaac as the adopted son of the King of Arabia is due to a confusion with the Caliph who was his patron and for whom he wrote this work. The book is made up of five parts. The first, consisting of five chapters, is introductory on the definition, classification and causes of fever. The second, consisting of twelve chapters, is on the ephemeral fevers, their causes and treatment. The third, four chapters, is on hectic fever and phthisis and their treatment. The fourth part, nineteen chapters, is on acute fevers and their complications. The fifth, twenty-two chapters, is on the putrid fevers. These chapter headings, kindly translated by Dr. Fred B. Lund of Boston, may be of interest:—

**A TREATISE ON FEVER**

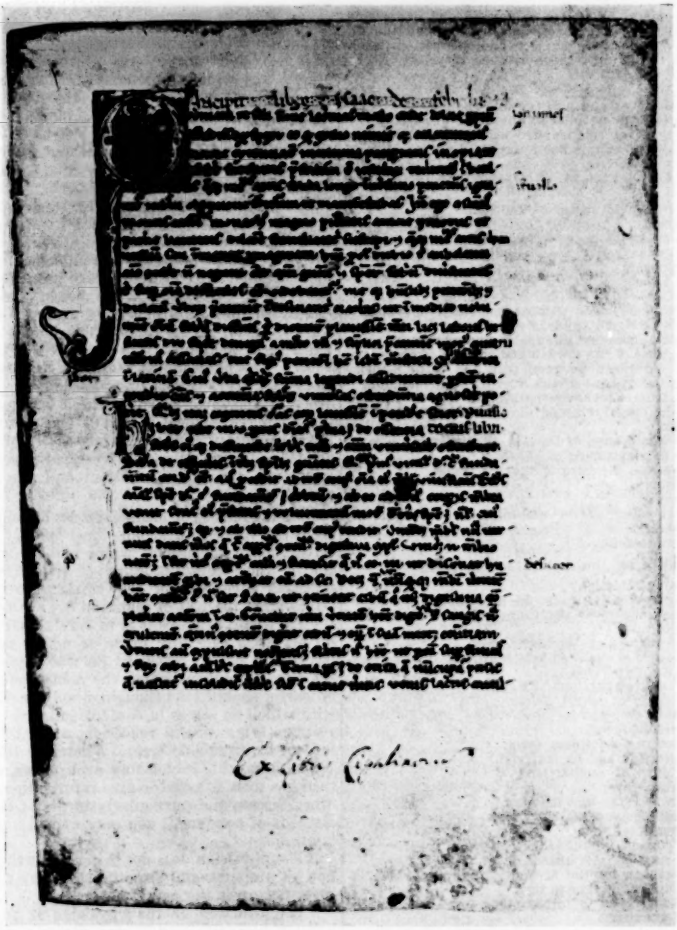
**By Isaac, the Jew, the Adopted Son of Solomon, King of Arabia**

**Prologue to the same by the Monk Constantine**

*First part*

The arrangement of the book.
The four subjects of inquiry.
The definition of fever.

On ephemeral fever resulting from the heat of the sun, and its cure.
On ephemeral fever resulting from cold and freezing and its cure.



FIRST PAGE LIBER DE FEBRIBUS — ISAAC JUDAEUS.
Version of Constantinus Africanus. Montpellier about 1250.
(Boston Medical Library, Solomon M. Hyams Collection.)

(Heading for chapter iv missing)
What is the cause of fever?

*Second part on ephemeral fever*

On ephemeral fever.
On the symptoms of ephemeral fever.

On ephemeral fever resulting from baths in hard water.
On ephemeral fever resulting from hot foods and hot drinks and its cure.
On ephemeral fever resulting from fasting and its cure.

On ephemeral fever due to hard work.
On ephemeral fever due to glands in the groins, neck and axillae, and its cure.
On ephemeral fever due to sleeplessness and its cure.
On ephemeral fever resulting from anger and its cure.
On ephemeral fever due to anxiety and depression, and their differences, (also concerning the difference between anxiety and depression: there are twelve differences between them).

*Third part*

On hectic fever and phthisis and their cure.
On hectic fever not due to any other disease.
On hectic fever compounded with putrid fever.
On the diet in simple hectic fever.

*Fourth part on acute fevers and their complications*

On fevers as the cause of delirium.
On delirium.
On the crisis.
On preliminary heat as an indication of fever.
On prognosis.
On the knowledge of the critical day.
How to know that the crisis is coming.
On continuous fever without putrefaction, which is called inflative, and on pleurisy.
On sputum, laudable, illaudable and neuter.
On the cause of the growth and rupture of abscesses.
On the difference between true and false pleurisy and hot abscess of the liver or peripneumonia.
On the difference between insanity due to diseases of the diaphragm and that due to disease of the brain.
On the significance of time in all diseases.
On the diet and cure of these.
Additional on the cure of these diseases.
On fainting.
On jaundice.
On inflammatory fever and pleurisy and their sequelae.
On false pleurisy.

*Fifth division—on putrid fevers*

What is putrefaction?
On the contributing cause of putrefaction.
On continuous fever resulting from putrefaction of the blood.
On the cause of pestilential fevers.
On the cause of smallpox which attacks almost everybody.
On the cause of continued fevers.
On the cause of putrid fevers.
On tertian fever and its cure.
On quotidian fever.
On the cure of quotidian fever.
On semitertian and its material.
On the cure of semitertian.
On quartan fever.
On quartan fever and its cure.
On simultaneous chills and fever.
On intermittent fever.
On the cure of simultaneous chills and fever.
On the cure of intermittent fever.
On the reason for the diversity of fevers which interrupt each other in turn.
On the difference in interrupting fevers, in quality and quantity.
On the mixture and doubling of fevers.
On fever resulting from pain in the liver and spleen or any other organ.

### HIS OTHER MEDICAL WRITINGS

Isaac's other medical writings are his "Book on Urine"—with abridgment in verse by himself; a "Book on Antidotes"; his "Book on Foods and Simple Remedies" and the "Book on the Preparatory Instruction for the Physician." Works on melancholy and on dropsy have been erroneously attributed to him. Sprengel regards Isaac as the outstanding Arabian writer on dietetics, and states that "his 'Book on Foods' follows the form of Abenguefith and others, who wrote on dietetics and materia medica, but it contains much more extensive descriptions than those of any other Arabian writer". A commentary on this work by Petrus Hispanus, the physician who in 1275 became Pope John XXI is contained in the "Omnia Opera" of Isaac. The one copy of Isaac's "Book on Preparatory Instruction for the Physician," in Hebrew, was discovered in 1861 by Soave, and was translated into Italian. Another edition with a German translation was published in 1885 by Kaufman. It consists of fifty paragraphs in the form of aphorisms. A number of these were translated into English by Dr. Harry Friedenwald in 1917, in his essay "The Ethics of the Practice of Medicine from the Jewish Point of View" (*Johns Hopkins Hospital Bulletin*, 28: No. 318, 1917). From this paper and from another by the same author entitled "Manuscript Copies of the Medical Works of Isaac Judaeus" in the *Annals of Medical History* (NS Vol. 1, pp. 629-639) I have borrowed freely. Some of the aphorisms show great wisdom and are worth repeating:

"As the science of medicine must be separated from the vulgar, physicians must 'purify themselves, make themselves white and be refined' for by their constant study of literature and ceaseless investigation they distinguish themselves from the rest of mankind.

"He whose business it is to bore a pearl must do his work carefully in order not to mar its beauty by haste. Even so he who undertakes the cure of human bodies, the noblest creations on earth, should take thought upon the diseases with which he comes in contact and give his directions after careful reflection, so that he fall into no irremediable error. Therefore the sage (Mesue) says: 'If you find a physician who is ready as soon as asked to give information about every disease and particularly to praise his own methods of treatment, you may regard him as a knave.'

"The physician does not bring about the cure, but he prepares and smoothes the way for nature; nature is the actual healer."

"The function of the physician is twofold, preserving health and curing disease; and the former is greater than the latter; for it is better for man that he avoid becoming ill than that he become ill and be cured."

"The physician who promises to cure disease with certainty takes a serious responsibility upon himself."

"If it is possible to bring about a cure by means of foods or healthful nourishment, then do not administer drugs because these, and especially the purging ones, are contrary to nature and are its enemies."

"Endeavor in thy treatment always to use the simple drugs, because it is easier for thee to acquire the knowledge of their action than that of the complicated ones."

"Never rely in treatment upon wonderworking cures, for these depend mostly upon ignorance and superstition."

"It is fitting to the profession of a physician that he should be moderate in eating—that he should not become a debaucher nor a glutton. It is a shame and a reproach, if he suffer from tedious illness, for then the people will say: 'How should he who cannot cure himself, cure others?' "

"Suffer not thy mouth to condemn when something happens to a physician, for everyone has his evil day. Let thy deeds praise thee, and seek not thine honor in another's shame."

"Make it thy special concern to visit and treat poor and needy patients, for in no way canst thou find more meritorious service."

"Try to ease the mind of the patient, encourage him to look forward to being cured, even if thou are not thyself convinced of it, for this will greatly strengthen his nature."

"If the patient does not follow thy directions, or if his servants and household do not carry out thy orders with dispatch or treat thee with respect, relinquish the case."

"Fix the fee of thy patient when his disease is in its ascendency and most severe, for as soon as he is cured he will forget what service thou has rendered."

"The more thou demandest for thy service, the higher thou fixest the fee for thy treatment, the greater will they appear in the eyes of the people. Thine art will be looked upon as insignificant by those whom thou treatest for nothing."

"Do not visit thy patient too often and do not remain with him too long, unless the treatment of the disease demands it, for it is seeing the doctor anew that gives joy to the patient."

"Too large a practice confuses the judgment of the physician and causes him to give mistaken directions. Excessive activity and effort diminish the power of the physician and weaken his spirit, for he must constantly think and be concerned about each patient, hopeful for his recovery, and pray for him as though he were 'one of his kin, that is near to him.' "

### ISAAC'S PHILOSOPHICAL WORK

Isaac's fame as philosopher doesn't measure up to his worth as physician. Because his work became accessible through Constantine's translation to men like Albertus Magnus and Thomas Aquinus, the medieval Christian scholastics ranked Isaac next in importance to Maimonides, physician and philosopher of the thirteenth century—the greatest Jewish personality of the Middle Ages. This rating, according to those who know, was greatly exaggerated. Israeli does merit the distinction of being the first Jew to devote himself to philosophic and scientific discussion directing the attention of Jews to the science and philosophy of the Greeks, but he was not an original or creative thinker. Maimonides, himself, in a letter to Samuel Ibn Tibbon, the translator of his "Guide to the Perplexed," refers to Isaac as "a mere physician". The two works of Isaac referred to in this letter are the "Book of the Elements," and the "Book of Definitions." Besides these he wrote treatises on metaphysics, logic, on the difference between the spirit and the soul, and a philosophical commentary on Genesis. According to Husik in his "History of Mediaeval Jewish Philosophy" Israeli was a compiler from various sources, especially from Hippocrates and Galen with whose writings he shows great familiarity, and made use of Aristotelian notions and Neo-Platonic tendencies.

Isaac Israeli stands out, then, as a fine representative of the earlier period of the brilliant Hebrew-Arabic era. He was a contemporary of the great Persian physician Rhazes (850-923), and a forerunner of Avicenna (980-1037) another great Persian, and of three brilliant men born in Spain—Avenzoar (1113-1162), Averroes (1126-1198), and Maimonides (1135-1204). He will be remembered, best, as one known in the Middle Ages as Monarcha Medicorum, the monarch of physicians, as one who had a Hippocratic belief in the power of nature, and as an exponent of the old Jewish tradition which held prevention of disease more important than cure.

# MEDICAL PROGRESS

## RECENT PROGRESS IN PHYSIOLOGY

BY PERCY G. STILES, PH.D.*

SYMPATHIN. Evidence gathered in the last few years has made familiar the concept that hormones or humoral agents may play the part of mediators between the nervous system and the organs which respond to its activity. In some cases the influence of the nerves upon a tissue may be relatively direct as in the production of the contractions of skeletal muscle. Again, the intermediate or chemical link may be clearly defined. Thus it seems well established that when the heart is inhibited through the vagus nerve the primary stage consists in the release of a drug-like agent in cardiac cells which then depresses their metabolism. In part at least this "vagus hormone" may be washed from the place of its origin by an irrigating solution. Carried to another heart it may exert some degree of inhibition, while if it is perfused through the walls of the stomach it may reinforce the local tone, a characteristic vagus effect. Some investigators identify the vagal hormone with acetyl choline (among others, Dale and Gaddum[1]).

For a much longer time it has been known that the extremely active substance called adrenin or epinephrin extends and prolongs the immediate influence of the sympathetic system. Stimulation of the splanchnic fibers which go to the adrenal medulla causes the discharge into the circulation of this potent principle. Its presence in the blood may then be demonstrated by the response of such test objects as the denervated heart, the iris or the intestinal strip. The existence of another humoral servitor of the autonomic system is indicated by the studies of Cannon and Bacq[2].

These workers have shown that when the sympathetic nerve-fibers leading to the hinder part of the body of a cat are stimulated there may be produced an acceleration of the denervated heart, a rise of blood pressure and increased secretion of saliva. The reactions are secured under conditions which preclude any nervous mechanism from having a part in them. They must be referred to the transmission through the blood stream of a chemical "messenger". The distribution of the sympathetic fibers concerned seems to fix the responsibility upon the smooth muscle cells which they play upon. The mass of tissue involved is quite limited: it includes the erectors for the hairs of the tail (pilomotors) and in some cases portions of the viscera. The hormone set free is called *sympathin;* the name is doubly appropriate as suggesting its origin from sympathetic stimulation and its property of evoking sympathetic responses. The resemblance between sympathin and adrenin is very close.

*Emotion and Blood Fat.* One of the best known effects of adrenin is a rise of blood sugar leading often to glycosuria. Himwich and Petermann[3] have now added the observation that adrenin has a parallel influence on the blood fat. Moreover, as Himwich and Fulton[4] demonstrate, this flooding of the circulation with fat can be induced by emotional stress. That is to say, internal release of adrenin as well as injection from without may bring about this mobilization. The rise of the plasma fat is striking: it may amount to a doubling or trebling of the original quantity.

Interesting suggestions have been made by Himwich and Fulton concerning the significance of this phenomenon. When it was shown that the blood sugar is increased in excitement the inference was natural that provision is thus made for the fuel requirements of intensely active muscles. But this view did not square exactly with the observations of several investigators who found that carbohydrate metabolism is usually depressed by adrenin. This has appeared inconsistent with the "Emergency Theory" according to which the service of the adrenal medulla is to give support to the system when maximal demands are to be met. Perhaps the value of sugar as the "fuel of life" has been overemphasized; it is now seen that in emotional crises extra fat is also offered to the muscles.

*The Chemistry of Muscle Contraction.* Attention may be called to the review of this subject by Milroy[5]. The array of facts presented must appall and dishearten the average reader. It is clear that the usual account of the contraction process must be regarded as far from complete. The data are for the time being an embarrassment even to the specialist in the field. A particular set of observations may be discussed with profit; the reference is to the unexpected behavior of muscle poisoned with salts of monoiodoacetic acid.

Lactic acid has long been given a prominent place in our expositions of the contraction process. Its liberation has been held to be essential to the development of tension and its removal to relaxation. In the absence of oxygen, muscular activity has appeared to involve a progressive increase of lactic acid in the tissues tending toward a critical level corresponding with ex-

*Stiles—Assistant Professor of Physiology, Harvard University. For record and address of author see "This Week's Issue," page 1113.

haustion and collapse. We have now to reckon with evidence that under the influence of the iodine compounds mentioned above isolated muscles may perform an impressive amount of work without producing lactic acid. This is true even when oxygen is excluded. The indications point to the existence of a secondary or alternative mechanism for the release of contractile energy. It is probable that when it is employed there is a momentary generation of phosphoric acid but that this is promptly bound in some new combination instead of accumulating. It disappears whether oxygen is available or not.

*Concerning the Kidney.* We have become accustomed to the idea that the units of the active tissues often work in shifts or relays. This was first made familiar in connection with the independent functioning of the fibers of skeletal muscle. Later a corresponding condition was discovered in the kidney; it was shown that the blood flow through individual glomeruli is subject to frequent interruption. Certain ones contract and close against the passage of corpuscles while others which have been quiescent resume the transmission of blood. A paper by Ebbecke[6] points to a probable advantage in this alternation.

According to the conceptions of urine formation now in favor, a filtrate from the blood escapes from the glomeruli and traverses the long and tortuous tubules. At the beginning of its course this filtrate is dilute as compared with the urine which is to be derived from it. In the tubules it becomes concentrated both by the withdrawal of water and by the elimination from the cells of specific dissolved substances. It will be noted that a rather prolonged contact between the fluid in the tubules and the cells of the wall is desirable. Too rapid passage must result in the arrival in the pelvis of the kidney of a dilute and voluminous urine.

The relatively great length of the tubules evidently favors the conservation of water. In addition, Ebbecke reminds us that when the glomerular capillaries at the head of a particular tubule cease to convey blood a slender column of the filtrate must be halted on its way to the exterior. While this arrest of progress persists, the give and take between the liquid and the abutting cells may be continued. The attainment of a suitable concentration of the urine will be more certain than it would be if the fluid in the tubule never ceased moving. There is a curious resemblance between a renal tubule and the intestine. Each receives—for its capacity—a large volume of liquid, each reduces this quantity to an extreme degree, in each an acceleration of advance may interfere with the concentration process. In both cases periods of standstill may be considered normal.

*External Cold and Gastric Secretion.* Bogendörfer and Sell[7] have made a clinical study of 170 patients respecting the effect of cold applications to the skin upon the quantity and acidity of the gastric juice. They find that both are markedly increased by this procedure. A biological inference suggests itself: namely, that the response of the stomach is appropriate to cold weather. The organ is chiefly important in protein digestion and the proteins of the diet are instinctively sought in increased quantity as a defense against low temperature. It will be recalled that protein is distinguished from carbohydrate and fat by its high "specific dynamic effect"; nitrogenous food elevates the metabolic rate independently of muscular exercise. It is fitting, therefore, that with cold surroundings the stomach should be adapted to deal with a larger intake of protein.

*Human Blood Volume.* The question of the quantity of blood in the body attracted the attention of physiologists at an early period, yet the estimates by different methods have been singularly divergent and this still continues to be the case. At the beginning of the century it was commonly taught that the blood makes up about one-thirteenth of the human body. A few years later lower figures were in favor and the great influence of Haldane supported a proportion of only one-twentieth. Recent determinations of blood volume, based on the use of injected dyes, lead to a return to the older and higher standards. In fact some of the new estimates are the highest ever entertained. Rowntree[8] believes that the ratio of blood to body is more like 1:11 than the traditional value. He assigns to the plasma a proportion of 5 per cent of the total mass of the organism thus making it equal to the whole blood as represented by Haldane.

*Recovery of the Heart from Electric Shock.* Hooker[9] has reported an interesting study of this problem. As he points out, death by electrocution may be due primarily to respiratory or to circulatory failure. In cases of the second type the central factor is loss of coördination in the ventricular contraction, in other words, fibrillation. Instead of the normal effective systole, alternating with complete rest, there is a diffuse and local flutter of the cardiac muscle with no power to drive the blood on its course. A tracing of arterial pressure at such a time naturally shows a fall to the base-line. Spontaneous recovery from ventricular fibrillation is not to be hoped for.

The prospect for resuscitation seems good when a certain course of action is pursued. The first requisite is to bring the pulsating cells of the heart into a condition of enforced rest. After a brief total inhibition the ventricles may resume coördinated and efficient beating. Hooker has brought about the desired standstill by injecting solutions containing a moderate excess (0.05 per cent) of potassium chloride. The perfusate,

warmed and oxygenated, is forced back toward the heart through one of the carotids. It traverses the coronary circulation and exerts its characteristic influence on the automatic tissue. The heart is permitted to rest for one minute.

To restore the beat a second perfusing fluid is sent in after the first. This contains no potassium but a small proportion (0.023 per cent) of calcium chloride. As the antagonistic salt replaces the inhibiting agent the normal heart action is in many cases brought back. Adrenalin has been introduced into the calcium-containing mixture with apparent advantage. Hooker recognizes that many difficulties stand in the way of the application of this method to emergencies in human experience. At the same time we must consider that the older means of restoration leave much to be desired and the new lead deserves to be followed up.

*Absorption from the Intestine.* Interesting quantitative determinations of the force exerted by the intestinal lining in the act of absorption are presented by Wells[10]. When a solution of salt or sugar isotonic with blood is present in a loop of bowel it is not strange to find that the rate of absorption varies directly with the hydrostatic pressure. The general principle had been recognized long before. But the measurements of Wells appear to correct a wrong impression to the effect that absorption cannot take place at all when the pressure in the canal is negative. By an ingenious experimental technique he has shown that this is a possibility.

To preserve an open lumen a coil of wire is introduced into the loop. The intestine is exposed in the abdominal cavity with its circulation carefully maintained. The segment is filled with the test fluid and this will remain in place even under moderate suction since the wire spiral prevents collapse of the gut. The extent to which absorption takes place is indicated by the movement of a meniscus in a burette communicating with the loop. A negative pressure, as would be expected, retards the process but does not entirely check it until the counteraction is impressively intense. In the animals used (dogs) the force required to terminate absorption of water was a suction of from 8 to 26 cm. of solution.

Translated into terms of mercury these figures become about 6 and 20 millimeters respectively. They are well below the estimated osmotic pressure of the colloids of the blood; they may approximate the corresponding value for lymph. Starling long ago emphasized the great part played by the colloid pressure factor in absorption and secretion. Wells' data are consistent with the theories of this eminent physiologist. If it had been found that absorption could proceed in spite of excessive degrees of negative pressure it would have been necessary to invoke new factors. It is rather a relief to find that for the moment we need not do this.

*Hearing.* One commonly hears the statement that nothing of much significance has been added to our knowledge of the auditory mechanism since the time of Helmholtz. Perhaps this pessimistic opinion may be challenged in view of certain remarkable experiments (Wever, Glen and Bray[11]) which are now being repeated and confirmed. In brief, they consist in a process of "wire-tapping" applied to the auditory nerve of the cat. The animal having been decerebrated, suitable leading-off electrodes are placed on this nerve. Connection is made with amplifying devices such as are used in radio operation and through these with a telephone. A musical note or spoken word received by the ear of the cat can now be recovered from the auditory path.

The sequence of events must be as follows: Physical sound-waves are carried through the air to the tympanic membrane which vibrates in a manner faithful to their form and frequency. The fluids of the labyrinth are agitated and the receptors of the cochlea transmute the mechanical stimuli into nerve-impulses. As these traverse the path to the brain, electrical pulses arise which signalize their passing. The possibility of translating these electrical fluctuations back again to sound recalls an old theory of hearing, long held to be discredited; the "telephone" conception associated with the name of Rutherford.

It had been urged against such views of the functioning of the auditory path that nerve-conduction cannot attain the frequencies characteristic of high-pitched sounds. After the passage of each impulse a very brief but definite time must elapse before another can be developed. This would seem to set a hard and fast limit to the rhythm of conduction. The reasoning is apparently conclusive if it is assumed that the fibers of the nerve "keep step" but such an assumption is probably unwarranted. We may imagine two fibers so stimulated that the peak of the disturbance in one is abreast of the resting phase of the other: immediately there is recognized a mechanism which will manifest a frequency twice as great as could be mediated by a single conductor. Much higher rates may be represented by the overlapping of electric waves in greater numbers of fibers. The analysis of tones, long attributed to the cochlear apparatus, is shifted to the brain.

REFERENCES

1 Dale, H. H., and Gaddum, J. H.: J. Physiol. 70: 109, 1930.
2 Cannon, W. B., and Bacq, Z. M.: Am. J. Physiol. 96: 392, 1931.
3 Himwich, H. E., and Petermann, M. L.: Proc. Soc. Exper. Biol. & Med. 27: 814, 1930.
4 Himwich, H. E., and Fulton, J. F.: Am. J. Physiol. 97: 533, 1931.
5 Milroy, T. H.: Physiol. Rev. 11: 515, 1931.
6 Ebbecke, U.: Pflüger's Arch. f. d. ges. Physiol. 226: 761, 774, 1931.
7 Bogendörfer, L., and Sell, A. R.: Deutsches Arch. f. klin. Med. 169: 166, 1930.
8 Rowntree, Leonard G.: The Volume of the Blood and Plasma. Philadelphia, W. B. Saunders Co., 1929.
9 Hooker, D. R.: Am. J. Physiol. 91: 305, 1929.
10 Wells, Herbert S.: Am. J. Physiol. 99: 269, 1931.
11 Wever, Glen and Bray: Proc. Nat. Acad. Sc. 16: 344, 1930.

# CASE RECORDS
## *of the*
# MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

## CASE 18211

## WEAKNESS AND DYSPNEA

### MEDICAL DEPARTMENT

*First admission.* An American salesman fifty years old was sent in from another hospital complaining of weakness and shortness of breath on exertion.

Three years before admission, when he was perfectly well and very active, he had a sudden collapse and was almost unconscious for fifteen minutes. He felt as though his heart had stopped beating. He was unable to move, but could speak. The following day he felt perfectly well and returned to work. A year later he had occasional pain low in the left chest, once moderately severe. It was treated with four injections of morphine, the first medicine he had had. These attacks became fewer and less severe and he returned to work. During the following year he worked intermittently. A year before his admission to the hospital he had several severe attacks of dyspnea with some lower left chest pain, aggravated by exertion. Since the onset of these attacks he had been practically unable to work. He was wakened at night by dyspnea, sometimes rather severe. He was troubled by sleeplessness. He was conscious of irregular heart beats and some dropping of beats. Eight months before admission he lost 30 pounds which he did not regain. During the six months before admission he had epigastric pain, occasional nausea, some trouble in getting food down and some gas and belching. All these symptoms were worse in the four months preceding admission. Three months before admission, following emotional strain, he entered a hospital because of severe nocturnal dyspnea and insomnia. He was digitalized and left in a month nearly symptom-free. He continued to take one small tablet (digitalis?) three times a day. He returned to almost his former activity and did full work one day a week for several weeks. Ten days before admission his ankles began to swell and he had a return of the left lower chest symptoms. He found his work too much for him. He had occasional cough at night. During the week before admission he had some numbness in the fingers, especially in the last two days.

The hospital where the patient had been treated three months before admission to the Massachusetts General Hospital reported as follows: Examination showed him undernourished and apparently very tired. There was moderate cyanosis of the lips, fingernails and skin of the arms. There was lymphadenopathy in the neck. The heart was enlarged to percussion. At the aortic area was a rough systolic murmur and an early blowing diastolic murmur, the latter best heard at the left of the sternum. At the apex there was a blowing systolic murmur. There was no presystolic rumble. There was a very questionable thrill felt at the aortic area. The blood pressure was 118/40. The lungs showed râles at the bases extending up to the angle of the scapula on the left. There was apparently some engorgement of the liver, though the edge was not palpable. There was very slight edema of the ankles and lower legs. A seven-foot x-ray film of the heart showed considerable enlargement, chiefly downward and to the left (right 5.4 centimeters, left 11.7, great vessels 6.4, internal diameter of the chest 28.8). The lungs appeared congested, particularly the left lower lobe. Fluoroscopy showed a strong rocking heart beat. Two weeks later a second examination with the fluoroscope and fast films failed to show calcification on the aortic valve. A lumbar puncture was negative. The patient was given potassium iodide and mercury protiodide. He was discharged at the end of four weeks.

His mother died of "complicated diseases", including heart disease. Two aunts and two uncles had also had heart disease. His wife had four children stillborn. Four were living and well.

He had had many boyhood diseases but no serious illnesses. Six years before admission following a sudden financial loss he had a "nervous breakdown" from which he completely recovered in a few months. He urinated once each night. During the past few years he had lost much money, had greatly reduced his scale of living and had dropped from his regular business to intermittent work of a lower grade.

Physical examination showed a fairly well developed and nourished man with pale, sallow skin. The apex impulse of the heart was seen and felt 11 centimeters to the left of midsternum in the sixth interspace, corresponding with the left border of dullness. There was a systolic thrill at the apex and over the aortic area. A high pitched blowing systolic murmur was heard at the apex, also a soft indistinct blowing diastolic. No mitral diastolic was heard. There was a loud harsh blowing systolic and diastolic murmur, loudest at the aortic area, transmitted to the neck and down the left of the sternum. The aortic second sound was absent. There was moderate to marked peripheral sclerosis. The blood pressure was 105/45 to 140/50. An elec-

trocardiogram showed normal rhythm, rate 90, notched $P_2$, right axis deviation, PR interval .2", $P_2$ wide. The lungs showed slight dullness at both bases posteriorly and moist râles in the right axilla. The abdomen was distended and showed tenderness over a resistant area in the epigastrium. The liver edge was felt one finger-breadth below the costal margin. The external rings were slightly relaxed. There was massive edema of the legs, more marked on the right. The pupils, knee jerks, ankle jerks and Babinski were normal. The fundi were normal.

The urine was normal in amount. The specific gravity was 1.004 to 1.017. There was no albumin. The sediment showed from two white cells to none at two of four examinations. Blood examination showed a normal white cell count and differential, hemoglobin 80 per cent, reds 6,150,000, slight variation in size and shape, platelets moderately reduced. Hinton and Wassermann tests were strongly positive twice.

X-ray examination showed the heart shadow very much enlarged. The greatest increase was to the left in the region of the ventricle. There was only slight increase in the supracardiac shadow (right 5.8 centimeters, left 11.3, total transverse 17.1, length 17.1, base 13, great vessels 7.8). The aorta did not appear to be dilated. Both lung fields were less radiant than normal. There was soft mottling at both lung roots extending well out toward the periphery and the bases. The outline of the diaphragm on the left was obscured by the large heart shadow. On the right it was in the usual position. The costophrenic angle was obliterated on the left. The interlobar septum was visible on the right.

The day after admission a diastolic thrill in the aortic area and an absent pulmonic second sound were noted. At the mitral area there was a presystolic thrill with systolic, blowing diastolic and middiastolic murmurs. The blood pressure on the right was 135/55, on the left 120/45.

Diuresis was established, with slowing of the heart rate and lessening of the dyspnea. At the end of a week the patient had lost 15 pounds and was feeling well and was sitting up. The pulse rate was under control. The aorta was not dilated. He developed red painful tender swellings over the shin bones. X-ray examination showed slight thickening of the cortex of the left tibia. The arteries of the legs and feet showed visible calcification. At the end of nineteen days the patient has lost 21 pounds. He was discharged improved.

*History of interval.* After leaving the hospital he felt fairly well with very limited activity. He still had slight shortness of breath, less marked than at his first admission. Two weeks after his discharge he noted diminution in his urinary output in proportion to his intake, and at the same time increase of dyspnea and some orthopnea partly due to nasal obstruction. He slept much better in the daytime than at night. On one occasion he had marked dyspnea on climbing stairs. Four weeks after admission his symptoms had become more marked. He had only fairly good effect from sleeping tablets, and also had pain and tenderness in the right upper quadrant. Three days before his second admission he had slight edema of the ankles. He had cough with slight sputum only in the mornings. For four weeks he had had little appetite and had had "indigestion", —slight epigastric pain.

*Second admission,* six weeks after his previous discharge.

On physical examination he was pale, a little thin, dyspneic and orthopneic. The nose showed crusting scabs, with a small perforation of the septum and a thin yellow exudate. The apex impulse of the heart was seen and felt in the sixth interspace 11 centimeters to the left of the midsternal line and one centimeter outside the midclavicular line. The right border was 5 centimeters to the right. The supracardiac dullness was 5 centimeters. There were loud systolic and diastolic murmurs heard best at the fourth interspace just to the left of the sternum. There was a palpable systolic thrill and a possible diastolic thrill over the same area. The blood pressure was 145/30. The pulse was absolutely irregular. The liver edge was palpable 2 centimeters below the costal margin. The abdomen was otherwise negative except for a little fluid. The lungs showed edema. The prostate was a little hypertrophied and irregular, firm but not hard. There was considerable edema of the ankles. The pupils, knee jerks and ankle jerks were normal.

The urine and blood were normal. A Hinton test was negative.

The temperature was 96.7° to 99.9°, with a drop to 96° the day of discharge. The pulse was 78 to 131. The respirations were 20 to 40.

The day after admission a short presystolic murmur was heard at the apex, where the to and fro murmur was also heard. That day bigeminy was noted and attributed to recent overdoses of digitalis. A throat consultant in answer to the question whether the condition of the nose could be a luetic manifestation replied, "Yes." On the ninth day the patient was fairly well compensated and was discharged to the Outpatient Department.

*History of interval.* After leaving the hospital the patient did only moderately well. Dyspnea, orthopnea and edema all returned very soon. Two weeks after his discharge his physician found his condition so serious that he sent him to the Emergency Ward.

*Third admission.* Examination was as be-

fore except for the following points: There was marked pallor. The lips were cyanotic. The left border of dullness of the heart was in the axillary line. There was an apical diastolic murmur and a blowing to and fro murmur loudest over the aortic area transmitted to the apex and the neck. There was Corrigan pulse. There was an extrasystole every other beat, giving bigeminy. There was alternation by the blood pressure cuff. The blood pressure was 160/50 to 135/60. The pulse was alternating. The lungs showed a few moist râles at the bases. The liver edge was 2 fingerbreadths below the costal margin and tender. There was a questionable small amount of fluid in the abdomen. There was pitting edema of the legs, thighs and sacrum.

The specific gravity of the urine was 1.010 to 1.016. There was a large trace of albumin at one of two examinations, bile at one, one to 10 white blood cells and one to 4 red cells at both. Blood examination showed 26,300 white cells, 83 per cent polynuclears, hemoglobin 80 per cent, reds 5,220,000, smear normal.

The temperature was 100° to 101.2°. The pulse was 70 to 145. The respirations were 42 to 15.

The patient had Cheyne-Stokes respiration with long periods of apnea. The day after admission fine sharp râles were heard at both bases extending one third of the way up on the right. On the third day the heart was regular. The patient was psychotic at night. The following morning the heart rate was regular. On the fourth morning he died.

## Clinical Discussion

BY RICHARD C. CABOT, M.D., AND GEORGE W. HOLMES, M.D.

### NOTES ON THE HISTORY

Dr. Cabot: The great majority of people with weakness and shortness of breath on exertion have heart disease. Knowing that and nothing else, that is what we expect him to have.

I do not know what that attack was three years before admission. It might perfectly well have been the Stokes-Adams syndrome, in which the heart stops and the person may faint or have a convulsion and then be quite well again.

Those attacks sound like angina or blocked coronary; without more data we cannot say which.

Notice that ten days before admission was the first time swelling of the ankles occurred.

That is a cardiac history throughout.

The blood pressure of 118/40 is notable of course for the large distinction between the systolic and diastolic,—probably aortic regurgitation.

He was given potassium iodide and mercury protiodide, showing that they believed him to have syphilis.

When we have a family history of that sort it generally means hypertensive trouble. That is the only type of heart trouble that seems to run distinctly in families, aside from rheumatic disease in some families.

The fact that his wife had four children stillborn is a certain amount of evidence of syphilis; but there are four living and well, so that we cannot be sure of what that means.

### NOTES ON THE PHYSICAL EXAMINATION

I have seen sallowness often in syphilitic aortitis, I do not know why; I do not know if it is characteristic.

We know the heart is big and we know about how big from the x-ray, so we do not need to pay much attention to the evidence by percussion.

They found a systolic thrill. Remember they looked for a thrill at the other hospital but found it very questionable. Otherwise the heart examination is essentially as they found it there.

"The aortic second sound was absent." That is an important piece of evidence which we are looking for now and which we were not given before. That is much commoner in the calcified type of aortic disease than in aortic regurgitation of the syphilitic type.

There is a markedly increased pulse pressure.

The fact that the electrocardiogram showed right axis deviation is surprising. The x-rays at the other hospital showed the enlargement of the heart chiefly to the left, yet they tell us there is right axis deviation. It ought not to be so.

Dr. Holmes: Occasionally we mistake the right ventricle for the left.

Dr. Cabot: The PR interval of .2″ is normal, as it should be.

The urine was essentially normal.

The high red cell count was due to cyanosis, I suppose.

"Hinton and Wassermann tests were strongly positive twice." That is what we are looking for.

Dr. Holmes: He had a very definitely enlarged heart. The increase is largely to the left in the region of the ventricle. The apex of the heart is somewhat blunted and lies rather horizontally in the chest. We looked repeatedly for evidence of dilatation of the aorta and did not find it. We also looked for calcification of the aortic cusps, which we have been able to see occasionally by fluoroscopy, and we were not able to demonstrate it. Recently we have had some cases which have shown this prominence to the right near the root of the aorta, which at autopsy have proved to have a moderate saccular dilatation in that area. This patient does show that, but I think fluoroscopic studies would

give a better interpretation than any that we can make. That film was taken to show any dilatation of the aorta, and failed to show it. There is some thickening extending out into the lung field in the region of the interlobar septum. There are a good many changes in the lung, probably due to passive congestion.

The important thing to decide is whether that is a luetic or a rheumatic heart. The enlargement of course could go with either. That is the shape of heart we usually see in aortic regurgitation. It is certainly unusual to see so much change in the lungs in luetic aortitis, and I cannot make a diagnosis of luetic aortitis without evidence of dilatation of the aorta; I do not think we have enough here to do that. If there was calcification in the peripheral arteries it would be some evidence of sclerosis in this region also, although we see cases with calcification in the peripheral arteries without much calcification in the aorta.

DR. CABOT: Do the shin bones show anything?

DR. HOLMES: They show no evidence at all of syphilis.

DR. MAURICE FREMONT-SMITH: Wouldn't you get just as much change in the lungs with a failing luetic heart as with an equally failing rheumatic heart?

DR. HOLMES: In general I should say yes; but most lueties fail very rapidly, so that changes in the lungs do not appear.

DR. CABOT: It is a very old observation that luetic hearts go longer without failure than rheumatic but fail very much more rapidly after the first break of compensation. A rheumatic heart fails once, then again and again and dies; a luetic case often dies at the first failure.

We have in the first place symptoms of heart trouble; in the second place of aortic regurgitation from the murmurs and the blood pressure. The questions we have in mind are those which Dr. Holmes has suggested in his discussion: is it a case of syphilitic heart disease with aortic regurgitation? is it the rheumatic type? or is it what I think to be a third type, not well identified, which gives us aortic stenosis without other lesions, which often gives so much calcification that x-ray can detect it? We have no help in this case in any of those discussions. We get no additional evidence of syphilis from the x-ray and no additional evidence of this extensively calcified aortic valve which we are looking for in elderly people, especially men, with these physical signs. The fact that he never had heart trouble so far as he knew until he was forty-seven years old itself suggests syphilis, because most rheumatic heart disease begins in childhood and shows some signs earlier than this, whereas most syphilitic heart disease begins just at this time, between forty and fifty.

There was a diastolic thrill the day after admission. That was absent before. There was also a presystolic thrill, which they have been looking for before but did not find. In other words they are finding evidence of mitral disease which we did not have before.

"The blood pressure on the right was 135/55, on the left 120/45," which shows how much difference there may be in the same readings by the same man taken a few minutes apart. It has not the slightest significance.

"The aorta was not dilated." So said the roentgenologist, I take it. We have no power to say it unless he says it.

DR. HOLMES: Thickening of the cortex of the tibia is very doubtful.

DR. CABOT: His first period here was as thoroughly successful a hospitalization as anyone could ask. He started on his way as well as could have been hoped.

Cardiac patients often sleep better in the daytime than at night, we do not know why.

Pain and tenderness in the right upper quadrant mean congested liver.

That history of the interval before the second admission all means one thing, that the heart is not doing its work well, that the liver and stomach are not doing their work, and he has the resulting symptoms.

In the nasal septum was a small perforation and in the nose were crusting scabs, which they have been looking for undoubtedly but apparently missed before. This is of course common in syphilis.

There is a pulse pressure of 115. We do not often see a pulse pressure as high as that. It is hard to read a diastolic pressure of 30.

There is nothing distinctive about the prostate.

It is notable that the Hinton was negative this time. They have been treating him; it may be due to treatment.

The throat consultant merely agreed that the condition of the nose could be a luetic manifestation. He did not say that it was. It might also be due to inflammation without any lues at all.

He went out the second time after a second successful period here.

They have not mentioned Corrigan pulse until the third admission, but it must have been there all the time because we have had such a high pulse pressure. There is still a big difference between the systolic and the diastolic blood pressures.

We have to account for the 26,300 white cells somehow.

### DIFFERENTIAL DIAGNOSIS

This case is simple in its essentials. He certainly died of heart disease; he certainly died of aortic disease; he certainly died of aortic regurgitation—and the question is what kind? He had on several occasions a systolic thrill at the base. In the absence of evidence of aneurysm a systolic thrill is rare with syphilitic

aortitis and common with aortic stenosis of the other types. An absent aortic second sound, which was mentioned once, is much commoner in aortic stenosis of the calcified type than it is with syphilitic aortitis. We have no evidence of syphilis in this man except in the heart—if there is syphilis there—and in the blood. We have not found in his shin bones or anywhere else evidence of that disease. It is true that his wife had four stillborn children, half the total number; with syphilis we sometimes hear of stillborn children and no others. He had a perforation of the nasal septum, which is certainly commoner in syphilis than in any other disease, though it does occur in simple sepsis. The evidence then is contradictorily balanced. We have in the blood evidence of syphilis. We have a heart in some respects like syphilis. The nose might be like syphilis. We have a history a good deal like syphilis but also not unlike the calcified type of aortic stenosis. I do not feel at all sure. I do not see how we can say which of those two situations outbalances the other. He is young for a death from the calcified type of aortic stenosis. We have had a few cases here in young people, but most of the patients are older than this. The history is rather short, but I do not feel sure it is shorter than a good many we have had. There is some evidence of a disease of the mitral valve that so far as I know means stenosis and never is due to syphilis. Though it is not very good evidence, such as it is it is against syphilis and in favor of rheumatic disease. Have we any evidence of a subacute bacterial endocarditis? I do not see that we have. We have leukocytosis at the end of life not accounted for, but we have no evidence of embolism. We have no blood cultures so far as I know. He had very little fever. I should say we can rule that out.

It seems to me then that we still have left three possibilities, rheumatic heart disease, syphilitic heart disease, and that other type to which I cannot give a name otherwise than by saying it is the calcified type of aortic stenosis. Have you a better name than that?

DR. TRACY B. MALLORY: No.

DR. CABOT: Among those three I find it very hard to go any further in differential diagnosis.

This is just the time when we need your help, Dr. Holmes.

DR. HOLMES: Those changes near the interlobar septum could be the result of infarction. That is the only evidence in the x-ray. This shadow which we interpreted as the left auricle could be a dilated aorta.

DR. CABOT: I think it is mere guesswork to go any further than I have gone.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Luetic heart disease.
Aortic regurgitation.
Congestive failure.

DR. RICHARD C. CABOT'S DIAGNOSIS

Aortic stenosis and regurgitation of the rheumatic, syphilitic or calcified type.
Mitral stenosis?

ANATOMIC DIAGNOSES

Luetic aortitis with aneurysm of the ascending aorta.
Luetic and rheumatic involvement of the aortic valve with regurgitation and relative stenosis.
Rheumatic endocarditis of the mitral valve; mitral stenosis.
Acute endocarditis, probably rheumatic.
Hypertrophy and dilatation of the heart.

PATHOLOGIC DISCUSSION

DR. MALLORY: The autopsy did not offer a clear cut solution to the differential diagnosis. There were three possibilities, and he had all of them. He had a very definite luetic aortitis, with an aneurysm fairly sharply localized in the ascending aorta just above the valve; a certain amount of luetic involvement of the aortic valve with separation of the commissures; also some rheumatic involvement of the aortic valve and very definite rheumatic mitral stenosis; and finally a terminal acute endocarditis, I think probably rheumatic again in character.

The question of the thrill interested me a good deal. The actual diameter of the aortic valve was quite within normal limits, 8 centimeters. The aorta above that valve was nearly twice the normal diameter. The ventricle below it was dilated to almost twice its normal size, so it is perfectly possible that the aortic valve was relatively stenosed even though it was normal in size.

I recently had occasion to look up most of the recent cases of luetic heart disease and luetic aortitis that we have had. I found two or three things that interested me. One was that out of our last twelve cases of luetic involvement of the aortic valve four have had very definite rheumatic affection of the heart as well, three mitral stenosis, one an acute myocarditis with Aschoff's bodies throughout the heart, but with no valvular involvement. The series is too small to give one a real idea of the frequency of this combination. On the other hand the combination is by no means rare.

One other point that interested me was the dilatation of the aortic valve in relation to the size of the heart. I think nearly all the textbooks give one the idea that regurgitation in luetic heart disease is due in part to deformity of the valve and in part to dilatation of the aortic ring, and that both of these elements are very definitely due to syphilis. We have checked over all the cases of involvement of the valve that we have had for ten years back. There were

about twenty-six cases if I remember rightly, and we found that in three quarters of those cases the valve ring was normal in diameter. In the remaining group of eight or nine cases in which the valve circumference was above normal all the other valves in the heart were equally above normal. So that I think dilatation of the ring depends upon generalized cardiac dilatation, not upon the direct effect of the luetic process. Syphilitic aortitis *per se* does not cause aortic regurgitation unless there is deformity of the valve. Dilatation of the aorta above the valve makes no difference at all in the function of the valve.

DR. CABOT: Did he have a terminal pneumonia to give him his leukocytosis?

DR. MALLORY: I think the acute endocarditis would explain that.

Do you remember the x-ray diagnosis at the other hospital, Dr. Holmes?

DR. HOLMES: They made a diagnosis of cardiac enlargement and aortic valve disease. They did not diagnose the aneurysm. The radiologist who fluoroscoped him there came to one of our department conferences here and discussed the case. We were able then to interpret this shadow as the wall of the calcified sac. I do not know whether they did that before or not.

## CASE 18212

## AN UNUSUAL CAUSE OF DYSPNEA

### MEDICAL DEPARTMENT

A divorced American woman of forty entered August 10. The chief complaint was extreme shortness of breath of three days' duration.

Three years before admission she was ill in bed for several weeks with cough, much sputum and extreme shortness of breath. She was seen by a lung specialist, who reported to her own physician that stereoscopic films of the chest showed smooth diaphragms. The heart and great vessels were normal. There was a shadow at the right base which appeared in the series of films taken. The lower third of the right lung showed both peribronchial dilatation and parenchymal changes. No free fluid level could be made out, although there was an area well out to the costophrenic angle that suggested it and was just below the angle of the scapula. The left lung showed merely peribronchial fibrosis. The apices were clear. Her temperature was normal for the most part during four days but occasionally reached a little over 99°. The sputum showed no tubercle bacilli. The specialist prescribed postural drainage and gomenol capsules. A month later he saw her again and found she had gained a pound, ran a normal temperature and pulse and on the whole felt better. There was much less moisture in the lung on the right side, the dullness was not so marked and the foul odor of the breath had disappeared. The next winter she had another attack. The specialist wrote her on February 23, "The specimen of sputum you sent me I am glad to say showed no tubercle bacilli. X-ray of your chest shows what is apparently a patch of bronchopneumonia at the base of your right lung which has not entirely cleared up. This is in striking contrast to the x-ray taken last summer." He advised gomenol and rest in bed. Again she improved very much during the following summer. She continued however to have constant cough with much sputum. She had been up and about until a week before admission, when her home burned and she had unusual exertion. Three days before admission she awoke in the early morning with extreme shortness of breath and could not move. Her physician said that her temperature had been 101° by mouth, her pulse 140, her respirations 42. Her fingertips and toenails were cyanotic. She had had marked dyspnea and had been uncomfortable even after medication.

Her mother died of heart disease with dropsy, her father of arteriosclerosis.

She had had pneumonia in infancy, pleurisy at twelve years and diphtheria twice. Repeated examinations for tuberculosis had been negative. Six years and four years before admission she had attacks of acute indigestion ending with vomiting. Five years before admission she weighed 122 pounds, her best weight; the summer before admission 117 pounds. She now weighed 100 pounds. She was so extremely ill that no further history was taken.

Clinical examination showed an almost moribund woman, very dyspneic, emaciated and cyanotic. The breath was foul. There was blood streaked sputum. The finger-tips, toenails and lips were cyanotic. The fingers and toes were clubbed. The apex impulse of the heart was seen and felt 8 centimeters from midsternum, 1 centimeter outside the midclavicular line. The percussion borders were not made out. The rate was 140, the rhythm regular. The sounds were normal. The beats were very forceful. There were no murmurs or thrills. The lungs showed increased breath sounds over the right front, much increased over the left back. The left front showed bronchovesicular breathing and fine moist râles throughout; tactile fremitus, voice sounds and whispered voice not remarkable. The right base showed dullness, cavernous breathing, increased tactile fremitus and pectoriloquy, with slight friction rub at the extreme base. Over the right upper back to below the angle of the scapula were bronchial breathing, slightly diminished resonance, increased tactile fremitus, whisper and spoken voice. The patient was too ill to be asked to cough or to have

extended examination in general. No abnormalities of the abdomen, pupils or reflexes were noted.

The urine is not recorded. Blood examination showed 25,300 white cells, 4,350,000 red cells, hemoglobin 60 to 70 per cent.

The temperature was 99.4° to 102.5°, the pulse 115 to 165. The respirations were 26 to 59.

X-ray examination showed an extensive process involving the greater part of both lung fields. The process was distributed along the course of the lung markings. The shadows were quite dense and beaded. In the region of the right lower lobe there was dullness of coarse and mottled character. The outline of the diaphragm was indistinct. The costophrenic sinuses were obliterated. Both apices were retracted. No characteristic cavity could be seen, and no fluid level. The heart and mediastinal contents were not displaced.

The patient was kept constantly in an oxygen tent. She coughed up large quantities of bloody pus. On August 14 she died.

## Clinical Discussion

BY MAURICE FREMONT-SMITH, M.D., AND AUBREY O. HAMPTON, M.D.

Dr. Fremont-Smith: Shortness of breath usually comes on slowly. When we have shortness of breath of three days' duration either the person has not noticed shortness of breath before or something unusual has happened. Pneumothorax comes on with a very rapid onset of dyspnea, cyanosis and extreme worry on the part of the patient, sometimes pain. Another thing is infarct of the lung after operation. Often times the first sign of infarct is sudden rise in respiration, then discomfort and a little cyanosis. Usually cardiac decompensation, which of course is the usual cause of shortness of breath, does not come on so suddenly. In this case it may have come on gradually, and the thresholds of consciousness being high, the patient may not have noticed it until she suddenly realized she had a good deal of dyspnea.

I wish we had the films taken three years before she came to this hospital. Peribronchial fibrosis suggests frequent colds: it suggests certain types of tuberculosis which we should expect to find in the upper lobes and not in the lower. The apices were clear. What are we to make of this area at the right base? I do not know what "peribronchial dilatation" means. There is bronchial dilatation, which one might possibly see. There is evidently something that has got out of the bronchus into the lung. We have actual destruction of the lung tissue, which is usually due to tuberculosis, pneumonia or abscess.

Judging by his treatment, the lung specialist thought on the whole that it was abscess of the lung. Evidently the argument in favor of lung abscess during the first year was pretty good.

What could have happened to her three days before she entered? Let us assume she had abscess of the lung or the only other thing she could have had which I can see, sometimes indistinguishable from abscess of the lung even by x-ray, that is bronchiectasis. She may have had unilateral bronchiectasis, although we do not often see it. There seems to be a little trouble on both sides here, nothing very marked on the left. She may have had lung abscess during the summer, feeling pretty well, than have developed a patch of bronchopneumonia about it. That could have accounted for the sudden dyspnea and sudden fever. She may have had lung abscess or bronchiectasis with metastasis to the brain and brain abscess. That is something which has to be thought of in all cases of lung abscess. There is nothing to make me feel that that is the diagnosis here. It is more probably a pneumonia spreading out around the area of abscess. Usually, however, when we get abscess the story is the other way,—pneumonia, a pneumonic patch and an area in that patch which breaks down and forms an abscess. After the abscess is formed I should say that it is less likely that pneumonia would develop. For one reason, we have that little scar tissue forming around the abscess. We expect extension to take place with difficulty. A great many lung abscesses are multiple. The lung may be honeycombed with abscesses.

It does not seem to me that pneumonia in infancy could be responsible for this. We should have had a story of poor health from that time onward. She probably would have been a sick child. She had pleurisy at twelve. Pleurisy is always important; it is suggestive of tuberculosis of the lung. There are a great many cases of dry pleurisy that are apparently not tuberculous, I do not know how many. We ought to get more statistics on that. Pleurisy with effusion is in a large proportion of cases a precursor of tuberculosis of the lung.

The fingers and toes were clubbed, as we should expect from any long continued pulmonary infection.

The lesion being on the right, if there is anything in the displacement of the heart we should expect the heart to be pulled toward that side unless there were fluid; if there were evidence of fluid this would explain the heart's being out to the left a little without our having to assume any enlargement.

In the description we have in front almost nothing except in the axilla; in other words the upper lobes are not involved. In the back we find the breath sounds much increased on the left, which may of course be compensatory. We

often make the mistake of putting the pneumonia on the wrong side because we find loud breathing on the side where the pneumonia is not. Lobar pneumonia may start in with suppressed breath sounds. Cavernous breathing usually means a cavity, and a cavity not filled with secretion, because if the cavity were filled with secretion we should get suppressed or bronchial breathing over it. Dullness with increased tactile fremitus and pectoriloquy would be consistent with consolidation around a cavity. I think we can throw out the diminished resonance and feel that the signs over the right back are evidence of either consolidation or compression.

I am interested that the red cell count is not lower. We should expect a woman who had had sepsis as long as she had to have more anemia than that.

The question here is, what are they going to find in the lungs and in the other organs? There is some evidence that the heart may be enlarged. I doubt if we have enough evidence to say that it is enlarged. I expect to find a normal sized heart. As to the lungs, I think we shall find cavity formation at the right base and either bronchiectasis or multiple lung abscesses with pneumonia around them. That however does not account for the lesion in the left chest. Perhaps because we have a lesion in the left chest it may be safer to say bronchiectasis as the fundamental background rather than lung abscess.

As to the other organs, we may find amyloid disease of the kidneys or liver. I see no reason to believe that there is any other disease to be found at autopsy than these two.

Sometimes we have a spirochetal secondary infection of a primary pyogenic lung abscess. In certain cases of lung abscess the effect of arsenicals is extremely helpful, clearing up at least the foul character of the sputum and sometimes bringing about healing of the abscess. I think if there had been spirochetal infection here it would have appeared, as she had been treated by a lung specialist and he undoubtedly looked at the sputum for other things than tubercle bacilli.

I will make a diagnosis of bronchiectasis, but I am not willing to leave it as mere bronchiectasis because it has probably got outside the bronchus, causing abscess and pneumonia.

DR. HAMPTON: I hope there is no mistake in the films. These look like films of an elderly woman. The chest, as you see, is grossly abnormal. The entire right lung shows mottled dullness, most dense in the first interspace and at the base. The diaphragm is not visible on the right side. There is mottled dullness in the left infraclavicular region which is rather linear and continuous with the lung root. The mottling on the right side is rather linear and follows the course of the bronchi. Within it are fairly well shown rounded areas of diminished density which could be small cavities or dilated bronchi. There is also what looks like an old fracture of the ninth rib on the left. The heart and mediastinum are shifted toward the right, either because of partial collapse of the lung or partial destruction of the lung. I do not think the heart is enlarged.

DR. RICHARD C. CABOT: Could that be metastasis?

DR. HAMPTON: It is not the usual picture. I believe it could be.

DR. FREMONT-SMITH: How do you interpret that lesion on the left?

DR. HAMPTON: It is very difficult to tell what it is. It may be nothing; it may be bronchi filled with secretions or thickening such as we get with infection of the opposite lung. This area in the right apex and the infraclavicular region has the look of tuberculosis, but there is nothing else in the picture which appears like tuberculosis. It looks more like the type of capillary bronchiectasis that we have had recently.

A STUDENT: What is meant by "peribronchial dilatation"?

DR. HAMPTON: I do not know. It may be that the record is misquoted. "Peribronchial thickening" is often used to describe bronchiectasis.

A STUDENT: What is gomenol?

DR. FREMONT-SMITH: It is a very soothing, nice smelling resinous substance used in sprays and taken internally in cases of lung abscess. It is excreted into the lung abscess cavity. I do not believe there is any real rationale behind it. One uses such things; I do not mean to belittle them; but they are of no real use in lung abscess.

Is there any question of tuberculosis? Why am I so ready to say in this case that there is not tuberculosis, although so many cases of tuberculosis do not show tubercle bacilli in the sputum? When we get a good deal of sputum and some evidence of lung destruction, if there is tuberculosis present and we hunt for the tubercle bacillus we shall find it.

A STUDENT: What does "retraction of both apices" mean in the final x-rays?

DR. HAMPTON: That is a rather old term describing dullness from the aerated lung in the apex to the first rib. It does not really mean that the apex is collapsed. It may be pushed down by a thickened pleura or the apex may be obliterated by consolidation or scar contractures.

A STUDENT: When can a diagnosis of gangrene of the lung be made in a case like this?

DR. CABOT: It can be made by the smell.

A STUDENT: Why couldn't this be a tuberculous pneumonia? You seldom get tubercle bacilli there.

DR. FREMONT-SMITH: She had a history of long periods during which the sputum was examined before her last illness.

A STUDENT: Is it not rare that you do not find tubercle bacilli in tuberculous pneumonia?

DR. FREMONT-SMITH: I think the tubercle bacillus is said to disappear during acute pneumonia and to reappear after the pneumonia is resolved.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Bronchiectasis.
Gangrene of the lung?
Empyema.

DR. MAURICE FREMONT-SMITH'S DIAGNOSES

Bronchiectasis or multiple abscesses of the lung, with pneumonia.
Possibly amyloid disease of the kidneys or liver.

ANATOMIC DIAGNOSES

1. *Primary disease.*

Bronchiectasis.

2. *Secondary or terminal lesions.*

Acute bronchopneumonia.
Acute bacterial endocarditis.

3. *Historical landmarks.*

Cholecystitis.
Cholelithiasis.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: The pleural cavities were both completely obliterated. There was no possible room for any fluid in either cavity. There was a very marked bronchiectasis, most marked in the right lower lobe, with one cavity about 3 centimeters in diameter and diffuse dilatation of all the other bronchi in that region. There was a slighter degree of bronchial dilatation scattered throughout the rest of the lungs, very much less in extent than the dilatation we found in the right lower lobe. There was a terminal, rather rapidly spreading bronchopneumonia of wide distribution. I do not believe that it had been present very long.

There were one or two surprises. The heart was not enlarged, but she had an acute vegetative bacterial endocarditis, which is by no means rare in the terminal stages as a complication of lung abscess or bronchiectasis, or in fact of any prolonged septic case, but particularly of lung abscess.

She also had a well marked choleeystitis and a number of gall stones which perhaps can be connected with the two attacks of indigestion and vomiting which she had six years earlier.

A STUDENT: What was the organism?

DR. MALLORY: We do not seem to have got any growth.

DR. FREMONT-SMITH: There was no organism of any interest in the cavity?

DR. MALLORY: I doubt it very much; we get such a variety of organisms.

The New England
# Journal of Medicine

SUCCESSOR TO
THE BOSTON MEDICAL AND SURGICAL JOURNAL

*Established in 1828*

Published by THE MASSACHUSETTS MEDICAL SOCIETY under the jurisdiction of the

COMMITTEE ON PUBLICATIONS

HOMER GAGE, M.D. JOHN W. BARTOL, M.D.
ROGER I. LEE, M.D. ROBERT B. OSGOOD, M.D.
EDWARD W. TAYLOR, M.D.

EDITORIAL STAFF

DAVID L. EDSALL, M.D. STEPHEN ROSMORE, M.D.
REID HUNT, M.D. HANS ZINSSER, M.D.
JOHN P. SUTHERLAND, M.D. BENJAMIN WHITE, PH.D.
GEORGE R. MINOT, M.D. HENRY R. VIETS, M.D.
FRANK H. LAHEY, M.D. ROBERT N. NYE, M.D.
SHIELDS WARREN, M.D. ROBERT M. GREEN, M.D.

WALTER P. BOWERS, M.D., *Managing Editor*

ASSOCIATE EDITORS

GEORGE G. SMITH, M.D. WILLIAM B. BREED, M.D.
JOSEPH GARLAND, M.D.

THE NEW HAMPSHIRE MEDICAL SOCIETY
PUBLICATION COMMITTEE
D. E. SULLIVAN, M.D. H. H. AMSDEN, M.D.
R. H. MARCOTTE, M.D.

THE VERMONT STATE MEDICAL SOCIETY
PUBLICATION COMMITTEE
WILLIAM G. RICKER, M.D. C. F. DALTON, M.D.
J. A. WARK, M.D.

SUBSCRIPTION TERMS: *$6.00 per year in advance, postage paid for the United States, Canada $7.01 per year, $7.52 per year for all foreign countries belonging to the Postal Union.*

*Material for early publication should be received not later than noon on Saturday. Orders for reprints must be sent to the Journal office, 8 The Fenway.*

*The Journal does not hold itself responsible for statements made by any contributor.*

*Communications should be addressed to The New England Journal of Medicine, 8 The Fenway, Boston, Mass.*

## AGRANULOCYTIC ANGINA

SINCE 1922, when Schultz[1] gave the name "agranulocytic angina" to a syndrome characterized by ulcerative or gangrenous stomatitis accompanied by an extreme leucopenia and a marked diminution or complete absence of the polynuclear cells (granulocytes) of the blood, with each year there has been an increasing general interest in this condition. This is attested by the fact that in the year 1931 there were one hundred and one papers on agranulocytic angina listed in the *Quarterly Cumulative Index Medicus*. It is obvious from a survey of the titles of these papers that under this term are included indistinguishable syndromes produced by a wide variety of causes. It was at first used to describe an idiopathic type seen chiefly in middle-aged women, which progressed almost invariably to a fatal termination. Recently, however, it has been employed rather loosely to designate a "malignant neutropenia" occurring in a wide variety of conditions such as the leukemias, poisoning by the arsphenamine group of drugs, overwhelming sepsis, etc. For the sake of clarity it will be imperative in the future to classify each case according to etiology and we shall then speak of "primary" and "secondary" agranulocytosis, the former term being reserved for that group of cases in which the etiological agent cannot be identified.

With the work of Jackson and his associates[2] there has been added interest in the disease because of the fact that a therapeutic agent has been discovered which seems to have lowered the general mortality and to have produced brilliant cures in some instances. At the present time it is too early to say whether pentose neucleotide has conclusively established itself, along with liver extract, iron, x-ray, etc., as one of the weapons in our armamentarium employed in combating diseases of the blood. But of all the methods of treatment used in agranulocytic angina up to the present, it seems not only the most logical but the most promising.

REFERENCES

1 Schultz, W.: Deutsch. med. Woch. 48:1495, 1922.
2 Jackson, H., Jr., Parker, F., Jr., Rinehart, J. F. and Taylor, F. H. L.: J. A. M. A. 97:1436-1440, November 14, 1931.

## The Massachusetts Medical Society

### MOTION PICTURES FOR THE ANNUAL MEETING

ON Wednesday afternoon June 8 motion pictures will be shown in the Ball Room of the Hotel Statler as a feature of the annual meeting.

2:30-3:00—Mechanism of the Heart Beat and Electrocardiography. Excitation and Contraction, and their Effect on the Electrocardiogram as Shown by Animated Cross Sections of the Diagrammatic Heart. Various Abnormalities and Irregularities are Clearly Depicted. (From the Lahey Clinic. Developed by Dr. Lewis M. Hurxthal.) For the first time the study of electrocardiography has been rendered simple. This is a teaching film designed to show the benefits and value of electrocardiography to those who have no knowledge of the subject. The picture will be discussed by Dr. Hurxthal.

3:05-3:45—Repair of Urethrocele, Cystocele and Lacerations of the Cervix. The introductory discussion outlines the etiologic factors of these lesions and gives the indications for repair with complete description accompanying the operative procedure.

The description of the operative procedure deals with (1) a demonstration of the essential and associate pathology, (2) the incision and the dissection necessary to mobilize the tissues for proper repair, (3) a second demon-

stration of the lesions and the tissues to be used in the repair, (4) details of placing sutures to obtain desired results, (5) a Sturmdorf dissection and repair of laceration of the cervix and (6) approximation of the mucosa.

Dr. Alonzo K. Paine will discuss this picture.

---

3:50-4:25—Repair of Second and Third Degree Lacerations of the Perineum and Rectocele. This and the previous film were developed by Dr. H. O. Jones, Associate Professor of Gynecology at Northwestern University Medical School and head of the Gynecological Service at St. Luke's Hospital, Chicago.

The introductory discussion outlines the etiologic factors of these lesions as well as contributing conditions with complete description accompanying the operative procedure.

The description of the operative procedure deals with (1) a demonstration of the lesion pointing out the severed ends of the sphincter ani muscle, (2) location and extent of the incision, (3) details of dissection demonstrating again the relations and tissues used in the repair, (4) proper placing of sutures to properly repair these lacerations and (5) demonstration of end result.

Dr. Frederick L. Good will discuss this picture.

---

4:30-5:00—Acute Appendicitis.

This is a two-reel film covering the diagnosis, operation, and postoperative treatment of the disease. The subject is introduced by normal anatomical considerations including the variations from the normal most frequently encountered.

The pathological aspect of inflammation of the appendix from its onset to perforation, with localized and generalized peritonitis, is well shown by animated drawings.

The signs, symptoms and diagnosis of the disease are emphasized. The important steps of the operation are shown by actual photographs following which the postoperative treatment is considered in some detail.

Dr. A. McK. Fraser will discuss this picture.

---

## THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

PEIRSON, EDWARD L. JR. M.D. Harvard University Medical School 1925. Assistant in Urology, Massachusetts General Hospital. Assistant Urologist, Salem Hospital. His subject is "A Simple and Inexpensive Method for Caring for Patients on Permanent Urinary Drainage." Page 1075. Address: 33 Summer Street, Salem, Mass.

VOSE, SAMUEL N. M.D. Boston University School of Medicine 1918. F.A.C.S. Surgeon, Genito-Urinary Department, Massachusetts Memorial Hospitals. Assistant Professor of Genito-Urinary Surgery, Boston University School of Medicine. Consultant Urologist at Leonard Morse, Martha's Vineyard and Norwood Hospitals. His subject is "Gunshot Wound of the Ureter." Page 1075. Address: 15 Bay State Road, Boston.

O'BRIEN, EDWARD J. M.D. Tufts College Medical School 1912. Visiting Surgeon to the Cambridge Municipal Hospital. Assistant Visiting Surgeon to St. Elizabeth's Hospital. Consulting Urologist to Somerville Hospital. His subject is "Report of an Unusual Case of a Large Diverticulum of the Bladder in an Infant." Page 1076. Address: 270 Commonwealth Avenue, Boston.

DEAN, ARCHIE L. JR. B.S., M.D. Cornell University Medical College 1917. Associate Surgeon, Memorial Hospital. Associate Urologist, Fifth Avenue Hospital. Visiting Urologist, Reconstruction Hospital. Consulting Urologist, Somerset Hospital. His subject is "The Use of Radium and the Roentgen-Rays in the Management of Cancers of the Genitourinary Organs." Page 1078. Address: 30 East 40th Street, New York.

MCCANN, JAMES C. A.B., Ph.D., M.D. Harvard University Medical School 1924. Surgeon, Fallon Clinic and St. Vincent Hospital, Worcester. His subject is "Invaginated Meckel's Diverticulum Causing Partial Obstruction of Ileum." Page 1089. Address: Main Street, Worcester, Mass.

COLSON, Z. WILLIAM. M.D. Tufts College Medical School 1923. Ophthalmic and Aural Surgeon, Lawrence General Hospital. Ophthalmic Clinical Assistant, Massachusetts Eye and Ear Infirmary. His subject is "Suction Tonsillectomy. Comments on the Waring Suction Technique." Page 1093. Address: 253 Essex Street, Lawrence, Mass.

MORRISON, HYMAN. B.A., M.D. Harvard University Medical School 1908. Visiting Physician, Beth Israel Hospital. Associate Professor of Clinical Medicine, Tufts College Medical School. His subject is "Isaac Judaeus and His Times." Page 1094. Address: 483 Beacon Street, Boston.

STILES, PERCY G. Ph.D. Assistant Professor of Physiology, Harvard University. Assistant Editor, *Biological Abstracts*. His subject is "Recent Progress in Physiology." Page 1100. Address: Harvard Medical School, Boston.

## MEETING OF THE AMERICAN SURGICAL ASSOCIATION

THE fifty-second annual meeting of the American Surgical Association was held in the Sterling Hall of Medicine at New Haven, Connecticut, May 16 to May 18, under the presidency of Dr. Charles H. Mayo, whose address was on the Surgery of the Sympathetic System, and was as usual an excellent review of the experience of his clinic. Sir John Fraser of Edinburgh, Surgeon to the King, was present as an invited guest, and spoke on Cancer of the Mouth and Tongue. He gave a masterly, thorough and unvarnished report of his experience, and discussed the combination of surgery and radiation in the treatment of these cases. The rest of the first morning was spent in the discussion of the time-honored but ever important subject of appendicitis, stimulated by the fact that certain statistics seem to show that the mortality of this disease, in spite of years of effort in perfecting the surgery and diagnosis, and educating the public to the necessity of early operation, seems to be increasing. Dr. William E. Gallie of Toronto reported a method of closing large hernia openings by what might be termed a many-tailed bandage (internal) made of a large sheet of fascia suitably cut for the purpose. Other subjects considered were Hernia of the Ureter by Dr. Moschcowitz of New York, with report of three cases. This seems to be a "sliding" hernia containing the ureter, with other retroperitoneal tissue. A review of an extensive experience in carcinoma of the stomach was given by Dr. Gatewood of Chicago. Parathyroidism was discussed by Max Ballin of Detroit.

The following day was featured by a Symposium on Blood Vessels and Lymphatics, which was made notable by a Review of Personal Experiences in the Surgical Treatment of Aneurysm by Dr. Rudolph Matas of New Orleans, whose experience both in length of time and number of cases is probably greater than that of any surgeon in this country, perhaps in the world. He himself has made many valuable contributions both to our knowledge of the subject and the surgical technique. His great learning, knowledge of literature and his charming personality combined to make this presentation most delightful.

Dr. Ellsworth Eliot spoke on Subclavian Aneurysm, a most interesting paper, and Dr. Harvey B. Stone on the Surgical Treatment of Postoperative Saphenous Thrombophlebitis, reporting cases in which fatal embolism had resulted, and advocating ligation of the saphenous vein. Dr. Frederick A. Coller of Ann Arbor reported a simple but accurate Environmental Test for Peripheral Vasospasm, and Dr. Mont Reid of Cincinnati gave a valuable and sensible discussion of the General Care of Peripheral Vascular Diseases, which ought to be in the hands of every surgeon who is concerned with cases of this sort. There were other notable papers in this symposium, which we have not space to mention, among them a discussion of the Results of Sympathectomy and Trunk Resection in Raynaud's disease, Thromboangiitis Obliterans and Scleroderma.

On Wednesday, Dr. S. W. Harrington of the Mayo Clinic reported a wonderful series of cases of operations for Mediastinal Tumors, and Dr. Frank S. Mathews of New York spoke on Clinical Consideration and Results of the Operative Treatment of Cancer of the Breast. This was a thoughtful and able discussion of results in about four hundred cases, covering a period of about twenty years. The results will bear comparison with those attained anywhere. Dr. William B. Coley read an extremely interesting and valuable review of his long experience in the Treatment of Sarcoma of the Long Bones. This brief report falls very short of doing justice to the meeting as there were many other valuable contributions and thirteen papers had to be read by title.

The local committee of arrangements, Drs. Verdi and Harvey of New Haven, and Dr. Elting of Albany, left no stone unturned in their efforts for the entertainment of the members and their wives. Dr. Verdi gave a reception and lawn party at his house, at which in a large tent on the ground they were entertained by artists from the Metropolitan Opera Company, and others. Needless to say the musical entertainment, as all the rest, left nothing to be desired. Mrs. Harvey entertained the ladies at a dinner on Tuesday evening, while the members partook of the annual dinner at the New Haven Lawn Club. The speakers were President Angell of Yale, Mayor Murphy of New Haven, Governor Cross of Connecticut, Sir John Fraser, and Dr. George D. Stewart of New York. The academic atmosphere of Yale University with its fine new buildings contributed greatly to the enjoyment of the meeting and the opportunity to visit the various laboratories and libraries was greatly appreciated.

Dr. Arthur D. Bevan of Chicago was elected the next President of the Association.

Drs. Edward D. Churchill and Leland S. McKittrick of Boston were elected to membership.

## MISCELLANY

### DR. LOUIS E. PHANEUF ADDRESSES THE KINGS COUNTY MEDICAL SOCIETY

Dr. Louis E. Phaneuf, Professor of Gynecology, Tufts College Medical School, addressed The County of Kings Medical Society, Brooklyn, N. Y., on Friday, May 13, his subject being "The Diagnosis and Management of Uterine Bleeding."

## A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

### Electrical Hazards in the Home*

The many uses to which we put electricity — for lighting, for heating, for cooking, for washing—bring us and our property into daily contact with a force which ordinarily is, and which we ordinarily consider to be, harmless. Most of us have, however, at one time or another, received shocks from the low voltage circuits of our homes, and we are all aware of fires that have been assumed to have started from defective low voltage circuits.

Since this is one of a series of Public Health broadcasts, and since the public naturally looks to the medical profession for advice concerning the things that may endanger life and health, we are going to speak this afternoon on the health hazards that may be incident to defective wiring, although they constitute a smaller and less well-known part of the total electrical hazards in the home.

If electrical appliances were all properly made, properly installed, properly cared for and replaced or repaired when out of order, there would be little need to sound a word of caution about their use. But such universal attention is not given to our wiring and fixtures, and their constant use tends to make us handle them carelessly.

From time to time deaths have been reported which seem to have been electrical in origin and to have followed contact with circuits of low voltage such as are ordinarily used in the home. These accidents have frequently been ascribed to some defect by which the voltage of the line was temporarily raised above its ordinary low level. We now know, however, that certain people are more than usually sensitive to electrical shocks, and that deaths have actually occurred as a result of contacts with 110 volt circuits.

The skin, when dry, provides a very good insulation for the body. Its resistance is almost completely lost, however, when it is wet, as can be demonstrated by holding first with dry and then with wet hands the electrodes from a battery operating through a make-and-break device. The dryness of our hands, however, is always relative, and often when we think our hands are dry they are actually well moistened with perspiration. In washrooms, kitchens and bathrooms, our hands are frequently wet, and it is under these circumstances that the most severe shocks are received. A considerable number of fatal accidents have happened to people in bathtubs, usually when attempting to turn lights off or on, or when moving or regulating electric fans or heating appliances.

It is the usual engineering practice to ground one side of all household lines, a practice that has been adopted to protect against fire hazard in case of possible transformer breakdown, which might allow the delivery of a much higher voltage to the household circuits. While such grounding reduces an occasional fire hazard, it provides many places in a dwelling house where an individual may himself ground the circuit by simultaneous contact with the ungrounded wire and with water pipes, drain pipes or radiators. The places in the house where such contacts are most likely to be made are the very places where our hands are most likely to be thoroughly wet—and the bathroom again appears as the room in which we are most liable to receive shocks.

Many people have, at one time or another, accidentally or intentionally, come into contact with low voltage currents under these conditions. For many people such contacts have not even resulted in unpleasant experiences; for most people such experiences, even though disagreeable, are not particularly dangerous. But for a few, low voltage contact of this sort is a definite hazard, as already pointed out, for a very few such shocks have been fatal.

The actual loss of life due to contact with home lighting circuits is insignificant in comparison to that caused by many other daily activities in which we all indulge. We do not unreasonably fear to use our automobiles, even though we all recognize the dangers to which their use exposes us. We do, however, take certain precautions in our handling of automobiles at dangerous points, or on slippery streets, and we can likewise take a few simple precautions in our handling of electric wires and the ordinary household appliances that carry the current. A statement of these precautions can be made as follows:

Worn insulation on electric wires is a common cause of exposure to shocks. If in doubt about the condition of your wiring and appliances, have them inspected by the electric company or by the city electrician.

Buy only first-class electric appliances. They will not only give you longer service than cheaper grades, but will also be safer. Appliances purchased from the electric light companies are invariably reliable.

Touching badly worn cords or poorly designed appliances is especially dangerous if the hands are damp, as in bathrooms, kitchens or laundries.

When in any rooms with damp floors, or near stoves, radiators or pipes which may be touched, avoid touching cords and the metal parts of lamp sockets, fixtures or other devices. The use of insulated sockets on extension cords and portable lamps will afford a large measure of protection against shocks.

Never touch any electrical cord or fixture when in a bathtub. In bathrooms and other damp places the insulation on wires and appliances may become defective, the skin is more likely to be wet, and

*Broadcast: March 15, 1932. Time: 5 P.M. Station: WBZ—Hotel Bradford.

open plumbing usually provides an excellent ground through which to receive a shock.

Use all precautions in installing radio equipment that you would in wiring the house for electric light. Your local authorities will usually be glad to examine your radio installation before it is placed in service.

The purpose of this talk has not been to create a feeling of insecurity but to point out the circumstances under which there may exist in the home a small but definite hazard to life and health, and to suggest that this electrical hazard may be overcome by certain simple precautions.

## PRESIDENT HOOVER'S OPINION OF HOSPITALS

President Hoover issued a statement calling attention to the fact that May 12 was National Hospital Day. Another made public April 30 by the White House is as follows: "The United States is blessed above all of the nations in the number, variety and excellence of its hospitals. Nowhere is private generosity and public wisdom better expressed than in the support of these institutions for the alleviation of human suffering.

"The hospitals are meeting an unusual demand upon their facilities this year, especially in the field of free service. It is, therefore, especially appropriate to call to the attention of all the people that May 12 is National Hospital Day, and to recommend that wherever possible our people on that day visit the hospitals and familiarize themselves with their splendid service to their community."

## AN ADDRESS BEFORE THE NEW YORK ACADEMY OF MEDICINE BY DR. GEORGE G. SMITH

On May 18, 1932, Dr. George Gilbert Smith delivered an address before the New York Academy of Medicine on "Observations on One Hundred and Fifty Cases of Bladder Tumor."

## THE ELECTION OF DR. F. J. ROBERTSON

At the meeting of the officers and trustees of the New York Society of Medical Jurisprudence, on April 30, Dr. Frank J. Robertson of 30 East 40th Street, New York, N. Y., medical director of Stamford Hall Sanitarium, Stamford, Conn., was elected a trustee to fill the vacancy caused by the resignation of Dr. Nathan B. VanEtten, of New York.

## MORTALITY RATES

Telegraphic returns from 85 cities with a total population of thirty-seven million for the week ending May 7, indicate a mortality rate of 11.8 as against a rate of 12.1 for the corresponding week of last year. The highest rate (23.4) appears for Utica, N. Y., and the lowest (5.9) for Somerville, Mass. The highest infant mortality rate (17.1) appears for Utica, N. Y., and the lowest for Lynn, Mass., Portland, Ore., and Wilmington, Del., which reported no infant mortality.

The annual rate for 85 cities is 12.5 for the eighteen weeks of 1932, as against a rate of 13.6 for the corresponding period of the previous year.

## ACTION RELATING TO THE SURGEON GENERAL'S LIBRARY

At the Annual Meeting of the American Medical Association held recently at New Orleans, the resolution adopted last year opposing the removal of the Surgeon General's Library was rescinded. This action followed an explanation by Dr. Robert U. Patterson favoring the removal.

## DR. GOLDTHWAIT GIVES A SHIP TO THE GRENFELL MISSION

Sir Wilfred Grenfell took possession of the schooner Jessie Goldthwait which was presented to the Grenfell Mission by Dr. Joel S. Goldthwait of Boston in memory of his wife. This vessel is to be used for medical service along the coast of Labrador. The schooner will soon proceed to the Grenfell Mission manned by a crew of college men under a veteran skipper.

## AN AWARD TO BROOKLINE FOR HEALTH WORK

The report has come to the Brookline Board of Health that a plaque representing an award for excellence in health conservation work has been given by the Chamber of Commerce of the United States to Brookline because of its standing among municipalities in the character and quality of its health administration work.

## PERSONAL ADVERTISING BY PHYSICIANS

The Supreme Court of Colorado has handed down a decision that a physician's license cannot be revoked by the State Board of Medical Examiners merely because he advertises. The particular offense was the publishing of a card giving the dates of visits to certain towns.

## RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR APRIL, 1932

The downward swing of diphtheria, which has been going on for many months, has continued, the number of cases for April being the lowest ever reported for that month and only once in the history of the State was there ever a lower figure and this occurred in August during the usual low season.

The number of typhoid fever cases reported is likewise considerably below the average.

Scarlet fever, on the other hand, has continued the increase in prevalence and April shows the highest number of cases ever reported in this state for this month.

The upward swing of lobar pneumonia noted last

month continued into April, but the number of cases has dropped off slightly.

The number of cases of chicken pox is higher than usually reported for this time of the year.

The continued drop in the number of cases of pulmonary tuberculosis, which has been noted for a number of months, may have come to an end, the number of cases reported in April being closer to the number reported five years ago than to the number of cases last year.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

| | Cases in Entire Pop. | | | | Case Rates per 100,000 Pop. | | |
|---|---|---|---|---|---|---|---|
| | April 1932 | April 1931 | Proso. Index* | Epi. Index† | April 1932 | April 1931 | Expected Rates‡ |
| All Causes | 11,581 | 9475 | — | — | 269.5 | 221.6 | — |
| Ant. Polio. | 4 | 5 | 7 | .6 | .1 | .1 | .2 |
| Diphtheria | 131 | 180 | 324 | .4 | 3.0 | 4.2 | 7.5 |
| Ep. C. S. Men. | 12 | 8 | 9 | 1.3 | .3 | .2 | .2 |
| Measles | 3106 | 2201 | 4735 | .7 | 72.3 | 51.5 | 110.2 |
| Pneu. Lobar | 629 | 483 | 479 | 1.3 | 14.6 | 11.3 | 11.1 |
| Scarlet Fever | 2249 | 1584 | 1210 | 1.9 | 52.3 | 37.0 | 28.2 |
| Tbc. Pulmonary | 413 | 346 | 414 | 1.0 | 9.6 | 8.1 | 9.6 |
| Typhoid Fever | 7 | 9 | 14 | .5 | .2 | .2 | .3 |
| Wh. Cough | 899 | 631 | 1070 | .8 | 20.9 | 14.8 | 24.9 |
| Chicken Pox | 1002 | 1006 | — | — | 23.3 | 24.8 | — |
| German Measles | 100 | 630 | — | — | 2.3 | 14.7 | — |
| Gonorrhea | 464 | 528 | — | — | 10.8 | 12.3 | — |
| Influenza | 38 | 31 | — | — | .9 | .7 | — |
| Mumps | 1390 | 767 | — | — | 32.3 | 17.8 | — |
| Syphilis | 369 | 372 | — | — | 8.6 | 8.7 | — |
| Tbc. Other Forms | 67 | 40 | — | — | 1.6 | .9 | — |

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus 2.0 would indicate twice the expected number, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

The same trend is noted in tuberculosis, other forms, the number of cases reported returning to the figure of five years ago.

Although measles has reached almost epidemic proportions in certain localities, the number reported for the state is just below the average for April.

Anterior poliomyelitis, epidemic cerebrospinal meningitis, influenza and whooping cough show no definite trend, the number of cases being about the average for this season.

RARE DISEASES

*Anterior poliomyelitis* was reported from Boston, 1; Dudley, 1; Leominster, 1; Millbury, 1; Southbridge, 1; Total, 5.

*Dysentery* was reported from Lynn, 1.

*Encephalitis lethargica* was reported from Everett, 1.

*Epidemic cerebrospinal meningitis* was reported from Boston, 1; Cambridge, 1; Canton, 1; Chelsea, 1; Clinton, 1; Everett, 1; Fall River, 1; New Bedford, 1; Peabody, 1; Wakefield, 1; Westfield, 1; Weymouth, 1; Total, 12.

*Malaria* was reported from Cambridge, 1; Chelsea, 1; Total, 2.

*Pellagra* was reported from Waltham, 1; Out of State, 1; Total, 2.

*Septic sore throat* was reported from Boston, 14; Chelsea, 2; Lynn, 2; Lynnfield, 1; Methuen, 1; Middleton, 1; Somerville, 1; Topsfield, 14; Tyngsborough, 1; Winchester, 1; Worcester, 1; Total, 39.

*Tetanus* was reported from East Longmeadow, 1; Fall River, 1; Total, 2.

*Trachoma* was reported from Boston, 1; Fitchburg, 2; Holyoke, 1; Lynn, 1; Templeton, 1; Worcester, 1; Total, 7.

*Trichinosis* was reported from Fall River, 1.

*Undulant fever* was reported from Brockton, 1.

## CORRESPONDENCE

### THE DISTRIBUTION OF ARSENICALS

The Commonwealth of Massachusetts
Department of
Public Health
State House, Boston

May 19, 1932.

Editor,
*New England Journal of Medicine*,

Most Massachusetts physicians are familiar with the fact that the Massachusetts Department of Pub-

lic Health distributes arsphenamine, sulpharsphenamine and neoarsphenamine to physicians, clinics, hospitals and various institutions, without charge, for the treatment of patients with syphilis.

For the past five years these arsenicals have been purchased under contract from the DePree Company of Holland, Michigan. Beginning July 1, 1932, the Department will have entered into a new five-year contract with Merck and Company, who were the successful bidders. For a time both DePree and Merck products may be distributed since the stocks of DePree arsenicals in some sizes will not have been exhausted at the time that the contract with Merck and Company takes effect.

The Department of Public Health distributes in the neighborhood of 50,000 grams of arsenicals annually. During the past three or four years nearly 700 physicians have received State arsenicals. Every lot is tested not only by the manufacturing company but by the National Health Institute and in addition, for toxicity, by Dr. Reid Hunt in the Department of Pharmacology at the Harvard Medical School. Thus every possible safeguard is used in order that a safe product may be available.

Yours truly,

GEORGE H. BIGELOW, M.D.,
*Commissioner of Public Health.*

## SUSPENSION OF ONE LICENSE TO PRACTICE MEDICINE IN MASSACHUSETTS AND REVOCATION OF ANOTHER

The Commonwealth of Massachusetts
Department of
Civil Service and Registration
Board of Registration in Medicine
State House, Boston

May 17, 1932.

*New England Journal of Medicine,*

At a special meeting on May 12, 1932, the Board of Registration in Medicine voted to suspend the license of Dr. James P. McCue of Hudson, Massachusetts, because of his court conviction for conspiracy to steal.

At the same meeting the license of Dr. William H. H. Briggs, of 334 Main Street, Haverhill, Massachusetts, was revoked because of his court conviction for performing an abortion.

STEPHEN RUSHMORE, M.D., *Secretary.*

## RECENT DEATHS

**MORAIS**—DR. WILFRID AURELIEN MORAIS, a prominent Fall River physician, died May 15. He was born in Fall River, the son of Thomas and Aimee Morais, graduated from Tufts College Medical School and had been in practice in Fall River since 1927. He was a member of the American Medical Association, the Fall River Medical Society and the Massachusetts Medical Society which he joined in 1928.

**HANDY**—DR. HARRIE DELMAR HANDY, a practicing physician of Harwich for more than thirty years, died May 16 after a short illness, at the Massachusetts Memorial Hospitals in Boston. He was a member of the Staff of the Cape Cod Hospital, Hyannis, the Barnstable Medical Society, the Massachusetts Medical Society and the American Medical Association. He was a member of the Harwich Masonic Order and the Odd Fellows. He is survived by his widow Mrs. Lyle L. Handy, and a daughter, Mrs. Irene Kenney of Methuen.

**WOLCOTT**—DR. JOSEPH ARTHUR WOLCOTT, a practicing physician in Watertown and Cambridge for nearly fifty years, died May 17 in his seventy-sixth year at his home in Watertown. At the time of his death he was Superintendent of the Watertown Relief Hospital. He was born in Keeseville, New York, and received his A.B. and M.D. degrees at McGill University, Montreal. He is survived by his widow, a daughter and two sons.

**RUSSELL** — DR. JULIA ANN BRAY RUSSELL died April 12, 1932. She was one of the first women to practice medicine in Massachusetts and was among the earliest graduates of Boston University School of Medicine. She was born in Reading in 1847 the daughter of the late John and Eliza (Holt) Russell and received her education at public schools and under private tutelage. Dr. Russell won her medical degree, cum laude, at Boston University School of Medicine in 1880. She practiced in Malden until about eighteen years ago when she moved to Boston. Dr. Russell was one of the founders of the Old and New Club. She is survived by two adopted daughters.

### LATE REPORTS

**McCARTHY**—DR. THOMAS F. MCCARTHY died August 9, 1931. He joined the Massachusetts Medical Society in 1897.

**YAFFE**—DR. JOSEPH PHILIP YAFFE died in October, 1931. He joined the Massachusetts Medical Society in 1924.

**STANHOPE** — DR. ALVIN HATCH STANHOPE died September 17, 1931. He joined the Massachusetts Medical Society in 1922.

## NOTICES

### THE BOSTON DISPENSARY
25 Bennet Street

EVENING FREE OR PART-PAY CLINICS
FOR GONORRHEA AND SYPHILIS

At the request of the Massachusetts Department of Public Health and the Massachusetts Society for Social Hygiene, the Boston Dispensary has established an evening free or part-pay clinic for the treatment of gonorrhea and syphilis. This clinic will be open one evening a week, 6 to 8 P.M., to working people and others, who cannot attend exist-

ing morning or afternoon clinics and whose income is insufficient to permit them to secure treatment at evening pay clinics or at doctors' private offices.

The clinic for gonorrhea in men and for syphilis in both sexes will be held on Wednesday evenings; the clinic for gonorrhea in women will be held on Monday evenings.

The policy governing admission to these clinics is as follows:

1. Patients able to attend existing morning or afternoon clinics are not eligible to this evening clinic.

2. Hospitals or clinics referring patients now under treatment are requested to furnish a discharge note, accompanied by a summary of the previous treatment.

3. Patients who are unable to pay will be received free of charge; a fee for others under the regular evening pay clinic rates will be determined in accordance with the patient's ability.

4. Patients able to pay the regular evening pay clinic rates of $1.60 for syphilis and $1 for gonorrhea should be referred to the Monday or Friday evening pay clinics. (Gonorrhea in females, Friday only.)

5. The Dispensary reserves to its admission officers the right of decision on the admissibility of each case. New patients applying for admission to the Wednesday evening free clinics, if found to be able to attend morning clinics, will be referred to the morning clinics of the Boston Dispensary or to the appropriate clinic elsewhere.

6. As the inability of patients to attend clinics in the daytime is the determining factor in the admission of patients to these Wednesday evening clinics, patients admitted and subsequently found to be able to attend morning clinics will be returned to the referring hospital.

FRANK E. WING, *Director.*

May 10, 1932.

## RADIO HEALTH MESSAGES

### MAY-JUNE, 1932

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:20 P.M.

May

31 Growth and Development

June

7 Prenatal and Maternity Service
14 New Findings in Oral Hygiene
21 Community Public Health
28 Communicable Diseases

### STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:30 P.M.

Health matters of public interest discussed by the Division Directors of the Department.

### RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P.M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

## REMOVAL

Joel Rosenberg, M.D., announces the removal of his office to 471 Commonwealth Avenue, Boston.

# REPORTS AND NOTICES OF MEETINGS

## THE SOCIETY OF PLASTIC AND RECONSTRUCTIVE SURGERY

The Society of Plastic and Reconstructive Surgery held its first meeting on Friday, April 15, at the New York Physicians' Club. The following officers were elected for the ensuing year:

President: Dr. Jacques Maliniak.
1st Vice President: Dr. Fred Albee.
2nd Vice President: Dr. Harold Vaughan.
General Secretary: Dr. Gaston Labat.
Recording Secretary: Dr. Arthur Palmer.
Assistant Secretary: Dr. Clarence Straatsma.
Treasurer: Dr. Leon T. Le Wald.
Historian: Dr. Isadore Goldstein.

This society is composed of men solely engaged in the practice of plastic and reconstructive surgery and also those in the borderline specialties, as orthopedic surgery, cancer surgery and radiation therapy. Among the members of this society are also men engaged in certain fields of medicine and surgery whose experience in their respective specialties justifies their presence as consultants. Thus are included the subjects of Anatomy, Regional Anesthesia, Medical Jurisprudence and a few others of similar importance. Its object is to concentrate on scientific activities of this surgical specialty and establish a forum for scientific presentations and discussions.

## ESSEX SOUTH DISTRICT MEDICAL SOCIETY

The Essex South District Medical Society held its annual meeting at The Tavern, Gloucester, Mass., on Tuesday, May 10, 1932. After the usual dinner, reports were made by the secretary and by the treasurer, and the following list of officers for the ensuing year was elected:

President: Dr. C. L. Curtis, Salem.
Vice President: Dr. C. L. Holtt, Lynn.
Secretary: Dr. R. E. Stone, Beverly.
Treasurer: Dr. Andrew Nichols, III, Danvers.
Librarian: Dr. C. M. Cobb, Lynn.
Commissioner of Trials: Dr. J. E. Simpson, Salem.
Censors: Dr. J. F. Jordan (Supervisor), Peabody; Dr. George E. Tucker, Salem; Dr. A. E. Parkhurst, Beverly; Dr. C. A. Worthen, Lynn; Dr. Hanford Carvell, Gloucester.

Councillors: Dr. G. H. Kirkpatrick, Lynn; Dr. J. F. Jordan, Peabody; Dr. R. E. Foss, Peabody; Dr. N. P. Breed, Lynn; Dr. J. W. Trask, Lynn; Dr. E. B. Hallett, Gloucester; Dr. C. H. Phillips, Beverly; Dr. W. G. Phippen, Salem; Dr. J. F. Donaldson, Salem; Dr. W. T. Hopkins, Lynn; Dr. F. W. Baldwin, Danvers; Dr. O. S. Pettingill, Middleton; Dr. A. E. Parkhurst, Beverly.

Executive Committee: Dr. J. R. Shaughnessy, Salem; Dr. R. P. Hallett, Gloucester; Dr. C. L. Holtt, Lynn; Dr. Sherman Golden, Beverly; Dr. O. S. Pettingill, Middleton; Dr. C. A. Bonner, Hathorne.

Nominating Councillor: Dr. A. E. Parkhurst, Beverly.

Alternate Nominating: Dr. N. P. Breed, Lynn.

Dr. C. L. Curtis, Dr. R. E. Stone, Dr. P. P. Johnson, by reason of their office are also Councillors.

The guest of the evening was Dr. David Cheever of Boston, who briefly reviewed the history of medicine in Massachusetts and spoke concerning the trend of modern medical practice.

WM. T. HOPKINS, *Reporter.*

## ESSEX NORTH DISTRICT MEDICAL SOCIETY

The ninety-first annual meeting of the Essex North District Medical Society was held at Phillips Academy, Andover, Mass., on May 11, 1932, at 1 P.M., Dr. H. H. Nevers presiding.

The President introduced new members since the last meeting, Drs. E. W. A. Holt of North Andover, F. A. Stowell of Newburyport, B. J. Mulholland of Lawrence, J. Y. Skeirik of Lawrence and F. W. Stockwell of Newburyport. The Secretary then read the minutes of the January meeting and they were approved. In the absence of Dr. Allen the committee on permanent invested funds did not report. The Treasurer reported his account for the year and it was accepted and placed on file.

The nominating committee, Dr. F. E. Sweetsir, chairman, reported the following nominations for society officers for 1932-33:

President: Otis P. Mudge of Amesbury.

Vice-President: Frank H. Coffin of Haverhill.

Secretary and Treasurer, Elmer S. Bagnall of Groveland.

Auditor: A. M. Hubbell of Haverhill.

Censors: Supervisor, Fred S. Smith of North Andover; E. Philip Laskey of Haverhill; J. Parr of Methuen, Charles F. Warren of Amesbury, Roland L. Toppan of Newburyport.

Councillors: Henry G. Armitage of Haverhill, J. Forrest Burnham of Lawrence, Henry F. Dearborn of Lawrence, Arthur P. George of Haverhill, T. Raymond Healy of Newburyport, John J. McArdle of Lawrence, Fred S. Smith of North Andover, Frank W. Snow of Newburyport, Leroy T. Stokes of Haverhill, W. Dacre Walker of Andover.

Nominating Councillor: J. F. Burnham of Lawrence. Alternate: Fred S. Smith of North Andover.

Commissioner on Trials: J. E. Bryant of Haverhill.

Committee on Funds: Granville S. Allen of Lawrence, George B. Sargent of Lawrence, Frank B. Pierce of Haverhill.

Correspondent to the *New England Journal of Medicine:* Elmer S. Bagnall of Groveland.

It was moved by Dr. Baketel, seconded and unanimously voted that the Secretary cast one ballot for the officers as nominated.

The report on the death of Dr. Tiani of Lawrence was read by the Secretary in the absence of Dr. Scarito, chairman. It was voted that the report be accepted, spread on the records and copy sent to the family. Dr. Hewitt, as chairman of the committee, presented resolutions on the death of Dr. John W. Shaw of Newburyport, and it was voted that the report be accepted, spread on the records and a copy sent to the family. Dr. Bartley of Lawrence being absent, the report on the death of Dr. John T. Cahill was not submitted.

The President announced the death, on January 13, 1932, of Dr. Charles H. Crawford of Lawrence, and appointed as a committee to draw up resolutions, Dr. Manahan, Dr. Schwartz and Dr. Nevers.

The Secretary read a communication from the *Ladies' Home Journal* calling attention to an article on maternal mortality in the March issue of that periodical requesting endorsement of this crusade. This matter received some discussion and it was finally moved, seconded and unanimously voted that the matter be placed on the table because such matters would more appropriately be handled by the Massachusetts Medical Society.

The Secretary read a communication from the Maternity Center Association of New York submitting a pamphlet for lay consumption in regard to maternity care. Discussion on this was to the effect that the State Department of Health has material and machinery for fulfilling this function.

The Secretary read a communication from the National Committee for Federal Legislation for Birth Control and after some discussion it was moved that this matter be laid on the table because of conscientious differences of opinion within the society.

The situation regarding chiropractic was discussed. The *Journal* editorial on page 865 presenting this situation was called to the attention of the members. Feeling was expressed that the drug-stores might help in educating people on this subject. Dr. Snow of Newburyport and Dr. Merrill of Lawrence expressed the sentiment that it perhaps was not worth while to fight against the cults because if they had no merit they would naturally fall by the wayside.

The Secretary read communications from the State Departments of Health and also of Mental Diseases received in response to the resolutions of the society recommending that professional staffs of these departments be members of the State Society. The communications follow:

State House, Boston, January 23, 1932.

Dr. E. S. Bagnall, Secretary,
Essex North District Medical Society,
281 Main Street,
Groveland, Massachusetts.

*My dear Dr. Bagnall:*

This is to acknowledge your letter of January 16 enclosing the vote of the Essex North District Medical Society expressing the opinion that all medical members of the staff of this Department should be members of the State Medical Society.

I shall present this matter at the next meeting of the Public Health Council and in the meantime would say that I appreciate profoundly the professional advantage of membership in the various professional societies. On the other hand, if a requisite for employment or continued employment of our doctors, nurses, engineers, bacteriologists, and the like was membership in the respective professional society I am afraid the attitude of the Department might be misinterpreted and the feeling might be created that we were more zealous of the welfare of the various professional societies involved than of the citizens. However, I shall let you hear from me further in this matter.

Cordially yours,
(Signed) GEORGE H. BIGELOW, M.D.,
*Commissioner of Public Health.*

---

State House, Boston, February 11, 1932.

Dr. E. S. Bagnall, Secretary,
Essex North District Medical Society,
Groveland, Mass.

*My dear Dr. Bagnall:*

Your letter of January 16, 1932, transmitting the vote of the Essex North District Medical Society taken on January 13, 1932, relative to membership of the staff of this Department in the State Medical Society, was presented to the Public Health Council at its meeting on February 9. After discussion, it was voted that the Council was in agreement with the spirit of the letter I wrote to you on January 23, 1932, in which I stated that it was not felt desirable to have membership in any professional society a prerequisite of employment in this Department since such a prerequisite could easily be misinterpreted.

Yours truly,
(Signed) GEORGE H. BIGELOW, M.D.,
*Commissioner of Public Health.*

---

State House, Boston, February 15, 1932.

Dr. E. S. Bagnall, Secretary and Treasurer,
Essex North District Medical Society,
281 Main Street,
Groveland, Massachusetts.

*Dear Dr. Bagnall:*

I am indebted to you for your communication of February 8.

I had an opportunity to read the report in the current number of the *Journal*. Dr. Merrill of Lawrence is familiar, I am quite sure, with the work of this Department and the institutions thereunder, as I recall he formerly was a Trustee of the Danvers State Hospital.

I am quite in accord with the resolution and believe that the members of the medical staffs of the institutions under this Department should, if eligible by length of service or on the basis of continuing in the service of the Department, belong to the State Society. As a matter of fact, a very goodly number of the physicians in all of our State institutions are members of the State Society.

Again thanking you, I am,

Very truly yours,
(Signed) GEO. M. KLINE, *Commissioner.*

---

After adjournment an excellent dinner was provided by the Phillips Inn, from 2 until 3. At 3 the members returned to Peabody Hall and the Petrolagar Laboratories presented two talking moving pictures of forty-five minutes each. The first was on perineal repair, the second on hospital management. These pictures were very good, devoid of any objectionable advertising propaganda and can be cordially endorsed.

Dr. Roderick Heffron, of the State Department of Health, outlined the serum treatment of pneumonia under the management of the State Department of Health as financed by the Commonwealth Fund of New York.

The meeting was then adjourned at 5 P.M.

There were 98 members present. This was the largest meeting the society has had and represents a little better than fifty per cent of all the members.

E. S. BAGNALL, *Secretary.*

---

## THE NEW ENGLAND SOCIETY OF PSYCHIATRY

The annual Spring meeting of the New England Society of Psychiatry was held at the Taunton State Hospital, May 17, with a large attendance representing all State institutions in New England.

Dr. George M. Kline, Commissioner of the Massachusetts State Department of Mental Diseases, was elected President of the Society. Other officers elected were Dr. Arthur P. Noyes, superintendent of the Rhode Island State Hospital, vice-president; Dr. Harlan L. Paine, superintendent of the Grafton State Hospital, reëlected secretary-treasurer; Dr. Ralph M. Chambers, superintendent of the Taunton State Hospital, councillor.

Announcement of the Awards for the best 1931 publications of research in psychiatry submitted was made at this meeting. The first prize of One Hundred Dollars was given to Drs. Leon J. Saul and

Hallowell Davis, jointly; the second prize of Fifty Dollars to Dr. L. Cody Marsh.

The speaker was Dr. A. Warren Stearns, commissioner of correction for Massachusetts and dean of Tufts Medical School. His subject was "Experiences in Treatment of Crime in Massachusetts."

H. L. PAINE, *Secretary-Treasurer.*

## SOUTH END MEDICAL CLUB

Dr. Frederick C. Irving, Professor of Obstetrics at Harvard Medical School and Visiting Obstetrician, Boston Lying-In Hospital, lectured on "Bleeding in Pregnancy" at the meeting of the South End Medical Club held April 12 at the office of the Boston Tuberculosis Association, 554 Columbus Avenue, Boston. Dr. Irving said, "The two most important conditions which cause bleeding in early pregnancy are extra-uterine pregnancy and abortion. The symptoms of miscarriage are pain and a discharge of blood from the uterus. The ovum becomes separated from the uterine wall, it becomes a foreign body and expulsion occurs. In the case of a threatened miscarriage, if the patient be put to bed for a reasonable length of time, in some cases the ovum may be preserved and attach itself again. During abortion the uterus should be allowed to empty itself with no interference, except when bleeding is more excessive than at the regular period. In case it is necessary to perform a curettage a sharp instrument should never be used but rather a large blunt curette.

"The pain in extra-uterine pregnancy is of a different nature, it is lateral instead of median. The bleeding is irregular and less extensive. Pelvic examination shows tenderness and pain on pushing the cervix. In diagnosing a rupture of ectopic pregnancy we find a history of hemorrhage and collapse.

"The two causes of bleeding in the latter half of pregnancy are placenta praevia and premature separation of the placenta which may or may not be associated with toxemia. The diagnosis of placenta praevia is made by feeling the placenta through the cervix.

"With a premature separation of the placenta associated with toxemia we find a board-like consistency of the uterus, pain due to stretching of the uterine wall and there may or may not be a moderate amount of external bleeding. The fetal heart is usually not perceptible at this time. A urinalysis should be done and the patient sent to a hospital."

## MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY*

The officers of the Middlesex South District Medical Society elected at the annual meeting, April 28, are as follows:

President: Fritz Walter Gay, Malden.

Vice-President: Allen H. Blake, Somerville.

Secretary: Alexander A. Levi, Cambridge.

Treasurer: Edward Mellus, Newton.

Commissioner of Trials: Edwin P. Stickney, Arlington.

Member of the Nominating Committee of the Massachusetts Medical Society: Augustus W. Dudley, Cambridge. Alternate: Herman T. Baldwin, Newton.

Censors: Fred R. Jouett, Cambridge; John McLean, Somerville; Dwight O'Hara, Waltham; Henry F. Keever, Newton; Thomas E. Reilly, Marlborough.

Orator: H. Quimby Gallupe, Waltham.

Councillors: District No. 1 — James W. Sever, Hollis L. Seavey, John P. Nelligan, W. Stewart Whittemore, C. M. Hutchinson, David C. Dow, W. A. Noonan. District No. 2 — Clarence H. Staples, Henry J. Keaney, Harry H. Flagg, Elmer W. Barron. District No. 3—Frederick G. Smith, Charles E. Mongan, Allen H. Blake, Walter T. Burke, Charles F. K. Bean, Frank L. Morse, Herbert Cholerton. District No. 4—Fred A. Higginbotham, Henry Joel Wolcott, Charles F. Atwood, Conrad Bell, H. Quimby Gallupe, Ezekiel Pratt. District No. 5—Lewis H. Jack, Irving J. Fisher, Walter H. Crosby, Hartley W. Thayer, E. D. Leonard, Leroy A. Schall, Edward Mellus, William D. Reid. District No. 6 — Dana F. Cummings, M. J. Shaughnessey. District No. 7 — Josephine D. Kable, Norman M. Hunter.

Auditors: Arthur N. Makechnie, Alvah C. Cummings, William McDonald.

Submitted by Committee: E. F. Sewall, George L. West, Lee W. McGuire, Joseph C. Merriam, Sidney C. Dalrymple, Lyman S. Hapgood, Otho L. Dascombe, Norman M. Hunter.

*Reports of elections are as furnished by the district secretaries. If there are found to be errors, they will be corrected in the official report of the Secretary of the Massachusetts Medical Society.

## NEW ENGLAND HEART ASSOCIATION

CARDIAC COURSE

The eighth meeting of the Cardiac Course of the New England Heart Association for the season 1931-1932 will be held in the Boston Medical Library (John Ware Hall) on Wednesday, June 1, at 4:30 P.M.

*Non-Valvular Heart Disease. "Chronic Myocarditis"*

1. Pathology. Dr. Shields Warren.
2. Diagnosis. Dr. Henry A. Christian.
3. Treatment. Dr. Henry Jackson.
4. Discussion. Dr. Francis W. Palfrey.

All who are interested are invited to attend.

Annual Meeting at 4:00 P.M.

PAUL W. EMERSON, *Secretary.*

## HARVARD MEDICAL SCHOOL ALUMNI ASSOCIATION

The annual meeting of the Harvard Medical School Alumni Association will be held in the Salle

Modern in the Hotel Statler, June 9, in connection with the usual luncheon at one o'clock.

Since this meeting is scheduled at the same time and place as that of the Massachusetts Medical Society, it may be of convenience to the members of the Association who wish to attend certain sessions of the Medical Society.

## SOCIETY MEETINGS

### CONGRESSES AND CONFERENCES

**June 1**—New England Heart Association. See page 1122.

**June 6, 7, 8, and 9**—National Tuberculosis Association. See page 598, issue of March 17.

**June 8, 9, 10**—Massachusetts Medical Society, Hotel Statler, Boston.

**June 9**—Harvard Medical School Alumni Association. See page 1122.

**June 21-24**—Catholic Hospital Association. See page 369, issue of February 18.

**July 10 - August 12**—The Second Intensive European Summer Course in Surgery, Gynecology and Obstetrics. See page 714, issue of March 31.

**Autumn**—International Postgraduate Courses in Berlin. See page 1169, issue of December 10.

**September 19-22** — International Congress of Biliary Lithiasis. See notice on page 427, issue of February 25.

**October 24-27** — American Public Health Association. See notice on page 1321, issue of December 31.

**October 24-28**—Inter-state Postgraduate Medical Association of North America. See page 39, issue of January 7.

## BOOK REVIEWS

*Fundamentals of Orthopaedic Surgery in General Medicine and Surgery.* By ROBERT B. OSGOOD, M.D., F.A.C.S., and NATHANIEL ALLISON, M.D., F.A.C.S. Published by The Macmillan Co. Price $3.00.

The Course in Orthopaedic Surgery at the Harvard Medical School has been one of the teaching triumphs of the last few years. This has been conducted by the authors of this book, following its initiation by Dr. Osgood, who succeeded Dr. Robert W. Lovett in the John Ball and Buckminster Brown professorship at the Harvard Medical School.

The plan of teaching has been to distribute among the students, a little time in advance, the ensuing lecture. This is then given with clinical illustration over one-third of the teaching period. The next third the lecturer places himself on the carpet, as it were, and he is asked questions by the students during this one-third period. The questions asked are a revelation and show the keenest interest on the part of the student body of the subject matter at hand. The third and last period is one of questioning, too, but this time the lecturer directs his questions at the audience. In this way subject matter is covered three times at each exercise, with the result that a surprising interest and lasting knowledge is achieved.

The lectures in this Course in Orthopaedic Surgery make up this valuable volume. The subject matter is presented primarily from the physiologic and pathologic standpoints. The behavior of skeletal tissue under different conditions is most interestingly presented, and the orthopaedist can very well read the book to round out and crystallize his physiologic and pathologic background. To the general practitioner and internist a perusal of the volume would prove a pleasure and a substantial profit. To students the country over, the book represents the best agency by which a sound foundation in orthopaedic surgery may be laid.

We recommend the book to medical students, practitioners, orthopaedists, and to all others who are interested in having a broad background of medical knowledge.

*A New Theory of Cancer and Its Treatment.* By C. F. MARSHALL, M.Sc., M.D., F.R.C.S. John Wright and Sons, Ltd. Bristol, England. 1932. Pp. 53. Price 3/6 net.

This pamphlet develops a new theory of cancer which postulates persistence of the chorionic villi in the body, forming the nucleus of a malignant growth. For the growth of cancerous tissue the presence of leucin in the blood is regarded as essential, and if carcinoma is present rather than sarcoma the formation of a type of ferric oxide in the tissues is necessary in addition. The statement is made on page six that cancer is essentially a disease of the hemopoietic system. A novel and inaccurate interpretation of endometriosis is given on page eighteen, relating the condition to leucocytic infiltration after parturition. According to the author the radical treatment of sarcoma "consists in the intravenous injection of an oxidation product of formaldehyde. . . ."

It is to be hoped that the author enjoyed seeing this material in print.

*Normal Youth and Its Everyday Problems.* By DOUGLAS A. THOM, M.D., Director of the Habit Clinics of Boston; Director of Mental Hygiene, Department of Mental Diseases, Commonwealth of Massachusetts; Professor of Psychiatry, Tufts Medical School. D. Appleton and Company, New York and London. Price $2.50.

In this absorbing book of over 300 pages, Dr. Thom has analyzed clearly and comprehensively the problems of the second decade of life—that vague transitional period known as adolescence. By its keen insight and by its remarkable clarity of style it has so delineated the complexities and problems of the youth of today that he who runs may read, and he who reads may understand. The optimism of the volume happily reflects the much needed optimism of modern psychiatry which finds much to do other than cataloguing and pigeon-holing psychoses and near-psychoses. An understanding of these difficulties; the prevention and treatment of their effects is what is needed and what is given. The case histories are interesting and abundant.

This book, the winner of the medal awarded by the *Parents' Magazine* to the best parents' book of the year, stands high in the list of modern works on constructive psychology.

*Illustrated Primer on Fractures.* Prepared by the Coöperative Committee on Fractures, American Medical Association. Chicago, 1931. Second Printing of Second Edition. Price $1.00.

We quote from the foreword of the first edition: "In 1926, with the concurrence of the Board of Trustees, the proposal was made to the Section on Surgery, General and Abdominal, and to the Section on Orthopedic Surgery for the appointment of a Coöperative Committee on Fractures, to present at the annual Scientific Exhibit demonstrations of proper handling of fracture cases. The Committee appointed by the sections included Dr. Nathaniel Allison, Boston, Mass., now of Chicago; Dr. William Darrach, New York, and Dr. Kellogg Speed, Chicago.

"For four consecutive sessions, the demonstrations of the treatment of fractures have been the center of an eager audience; usually seven booths were required. A large corps of physicians aided the general and advisory committees by giving demonstrations. The United States Army Medical Department generously coöperated by detailing soldiers on whom the demonstrations were made.

"Each year there was prepared in advance an illustrated folder, depicting the booths and reproducing the legends which carried the important messages. These were distributed to those interested in the fracture exhibits. The demand for these folders from those who attended the demonstrations, from teachers in medical schools, and from others as well, has been so great that it was deemed advisable to assemble all of them under one cover as a 'Primer on Fractures.'

"It is emphasized that the purpose of the Primer is not to standardize treatment of fractures; it is to suggest what, in the opinion of the Coöperative Committee on Fractures, constitute acceptable methods of treatment."

At the time of the publication of this quarto of 63 pages the members of the Coöperative Committee had been assisted by an advisory committee of seventeen men and upwards of one hundred and forty demonstrators at the annual meetings (including omissions from the list given on pages 3 and 4).

The volume consists primarily of 50 line drawings of the booth exhibits at these annual meetings with a subtended explanation of the instructive purpose of each booth exhibit. The opposite page of each of these drawings is left blank for "notes". The drawing of each booth depicts the operators and subjects (patients) on the floor at the center with pertinent instructive signs at the back and two side walls.

The fundamental principles in the treatment of various fractures portrayed in each booth have been determined after much deliberation so that each booth exhibit is of great aid to the general practitioner in the treatment of fractures. These drawings alone with their subtended text, therefore, are of inestimable value to the practitioner who undertakes the treatment of fractures. This assembly of line drawings of the demonstrators of the booth and their subjects (patients) plus the principles of treatment as displayed on the signs on the walls of the booths cover the desiderata of treatment of the common fractures with which the general practitioner is confronted. The illustrations are practical suggestions (not dictates). If he follows them, he will be rendering his patients intelligent service.

Of late there has been a far greater interest in the treatment of fractures than in years past. This is easily demonstrable by scanning the titles of the articles in medical journals. This increased interest in the treatment of fractures has been brought about largely by the efforts of the members of the Committee who published this volume, their advisory committee and those who assisted in conducting the demonstrations at the annual meetings of the American Medical Association. That the authors of the book left blank pages opposite the illustrations demonstrates their realization that the treatment of fractures is still an uncompleted study, is still a subject which can yet be improved. As great as have been the advances over the past one or two decades much has yet to be learned as these blank pages attest.

---

*The Fundus of the Human Eye,* an illustrated atlas for the physician. By Ernest Clarke. Humphrey Milford. Oxford Medical Press 1931.

Clarke's Atlas offers 51 plates in color of the normal and abnormal human fundus oculi. The plates are well done, and show the more common abnormal conditions. With plates so excellent, one regrets to find so brief a description of the various conditions shown. Interpretation of abnormal findings in terms of pathology would seem to be as important as the recognition of the abnormality, if the volume is to be educational and not merely entertaining. Even so, this atlas may well serve to introduce the medical student and the practitioner to the usefulness and the delights of ophthalmoscopy.

---

*Researches From the Third Division of the Anatomic Institute of the Imperial University of Kioto.* Edited by Professor Dr. Seigo Funaoka. Series "A." Researches on the Peripheral Nervous System. Vol II. Branchial Plexus and Nerves of the Upper Extremity.

This monograph represents an exhaustive investigation of the brachial plexus in Japanese subjects by Dr. Ko Hirasawa. Successive chapters are devoted to the roots of the plexus, the form of the plexus, its short branches, and to the radial, musculocutaneous, median, ulnar, brachial and antebrachial, cutaneous, and intercostobrachial nerves. These investigations are illustrated with numerous tables and excellent diagrammatic figures. There is abundant reference to the literature of the subject. This study is a valuable contribution, of great interest to anatomists, on the subject of Morphology and structure of the brachial plexus.